THE JOURNAL

OF THE

American Medical Association

*Published Under the Auspices of the Board of Trustees*

VOL. 165, NO. 12 — CHICAGO, ILLINOIS — NOVEMBER 23, 1957

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# ARTERIOSCLEROSIS AND RENAL HYPERTENSION

## INDICATIONS FOR AORTOGRAPHY IN HYPERTENSIVE PATIENTS AND RESULTS OF SURGICAL TREATMENT OF OBSTRUCTIVE LESIONS OF RENAL ARTERY

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*In the two-year period, 1955 and 1956, 104 selected hypertensive patients were subjected to aortography. Of these, 30 were found to have unilateral or bilateral obstructive lesions of the renal artery. Most of these lesions were considered to be the primary cause of the hypertensive disease but some aggravated an existing essential hypertension. Most of the obstructive lesions were arteriosclerotic plaques. There were six instances of poststenotic aneurysmal dilatation. Currently the most important means of recognizing renal artery disease is renal angiography accomplished by means of translumbar aortography. Of the 30 patients, 19 had either nephrectomy or corrective renal artery surgery, which usually resulted in remission of the hypertensive vascular disease.*

THE PRODUCTION of experimental hypertension by partial occlusion of a renal artery [1] and the demonstration of the renal pressor system [2] led to the suggestion that atheromatous plaques frequently found in the renal arteries of patients who died of hypertensive disease might be the cause of the hypertension itself.[3] Later reports showed that the atheromatous lesions did not cause significant narrowing of the arterial lumen,[4] and it was finally concluded that obstruction of the renal artery was an infrequent cause of clinical hypertension.[5] In spite of the recent advance in the investigation of the renal pressor system [6] there is as yet no reliable method for the detection of its activity in hypertensive patients.

Until the recent development of translumbar aortography no methods were available for the visualization of renal arteries in patients. Between 1950 and 1954, aortography in five patients, whose hypertension manifested unusual characteristics, demonstrated renal artery occlusive disease; four of these have been reported.[7] These findings led to more frequent use of aortography in the study of hypertensive disease. The purpose of this paper is to summarize these observations in 104 selected patients in the two-year period 1955-1956, to discuss the lesions that were found, to describe some of the diagnostic tests utilized, and to present the results of treatment of these patients.

### Basis of Selection for Aortography

Aortography was not used as an investigative routine but was performed according to the following indications.

First, any hypertensive patient, regardless of his age or the duration of the hypertension, who shows unexplained disparity of the size or function of the kidneys by intravenous urography should be sub-

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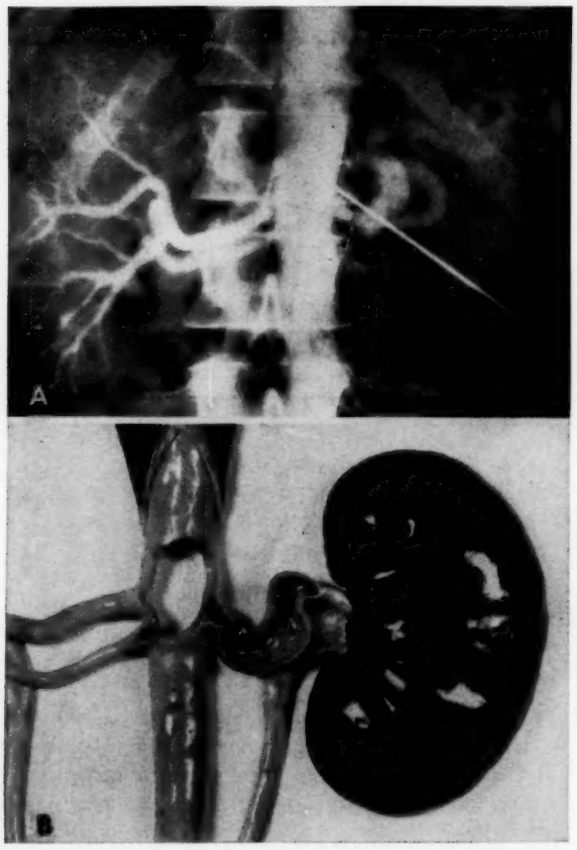
Read before the Section on Internal Medicine at the 106th Annual Meeting of the American Medical Association, New York, June 6, 1957.

jected to aortography. Disparities in kidney length of only 1 to 2 cm. or a slight delay in appearance of radiopaque medium on one side may be indicative of renal artery occlusive disease. As a general rule, a kidney which is shown by intravenous urography to be nonfunctioning but which is anatomically normal on retrograde pyelogram can be considered to have an obstruction of its vascular supply. Important as such disparities in size and function may be, it must be emphasized that the intravenous urogram may be entirely normal in patients with obstructive arterial lesions.




*A*, translumbar aortogram demonstrating a constriction of left renal artery due to atheromatous plaque and poststenotic aneurysmal dilatation in 33-year-old man with malignant hypertensive syndrome. Coiled splenic artery overlaps renal artery. *B*, cutaway model demonstrating plaque and poststenotic dilatation.

Second, aortography is indicated in young patients who do not seem to have essential hypertensive disease, since they lack a family history of hypertension, and do not present any other demonstrable cause of hypertension. In this study, eight hypertensive patients who were shown to have renal artery disease were less than 35 years of age and three were less than 20 years of age. Just as it is now accepted that occlusive disease of the coronary arteries is not rare in patients in the third or fourth decades of life,[8] so must it now be recognized that arteriosclerosis of the renal artery is an important cause of hypertension in these age groups.[9] An example of this diffuse premature arteriosclerosis is illustrated in the following report.

A 33-year-old man, with diffuse, premature arteriosclerosis was referred to us by Dr. Donald Williams, Marietta, Ohio, in October, 1955. His hypertension was of four years' duration, but he had recently developed the syndrome of malignant hypertension, with diastolic pressures averaging 132 mm. Hg. An intravenous urogram showed disproportion of the renal masses but similar excretory function. The left kidney was 12.3 cm. long, the right 14 cm. The urine flow from the left kidney was decreased. The total renal blood flow was reduced to 639 ml. per minute. An aortogram revealed an occlusion of the left renal artery (see figure). Left nephrectomy and biopsy of the right kidney were performed on Oct. 25, 1955. The pathological examination showed slight focal tubular atrophy of the left kidney; biopsy of the right kidney showed moderate medial hypertrophy of arterioles and slight proliferation of one glomerular tuft.

Postoperatively, the blood pressures fell toward normal and there was striking and rapid improvement in his health. At the time of his discharge his blood pressure averaged 143/86 mm. Hg, all signs of congestive heart failure had disappeared, chest x-ray showed return of normal heart size, and hemorrhage, exudates, and papilledema had disappeared from the eye grounds. There was a 10 lb. (4.5 kg.) gain in weight before the patient was discharged. He was seen by us in March, 1956, at which time he was asymptomatic and his blood pressure averaged 135/83 mm. Hg. His optic fundi showed only a grade 1 constriction and sclerosis, his heart size was normal, the electrocardiogram was normal, and renal function was excellent with slight proteinuria.

This patient died on July 7, 1956, 10 months after nephrectomy. Autopsy, performed by Dr. D. B. Thornburgh, Marietta Memorial Hospital, Marietta, Ohio, showed that the patient died of coronary thrombosis occurring at a point of severe thickening of the intima, with myocardial infarction. He also had massive cerebral necrosis. The right kidney was found to be normal.

The third group of patients in whom aortography should be performed are the elderly hypertensive patients who suddenly develop accelerated or malignant hypertension. The syndrome of malignant hypertension is a rare complication of essential hypertension in patients more than 55 years of age. Therefore, a patient more than 55 years of age who suddenly develops malignant hypertension should be suspected of having a secondary cause of this change in the disease.

The fourth group of patients selected for aortography are those of any age with long-standing essential hypertension whose disease abruptly becomes more severe. This is particularly the case in those who have had previous urograms and who now show a change from the original urogram. The indication is still greater in those whose condition suddenly deteriorates or who develop hypertension after an attack of flank pain. Such an attack may be due to thrombosis of a renal artery with subtotal renal infarction.

## Aortographic Findings

Of the 104 patients who were selected for aortography during the two-year period, 30 were found to have focal renal artery disease. These findings are presented in table 1. In the majority of these 30 patients the obstructive lesion of the renal artery was considered to be the primary cause of the hypertension, whereas in other patients it was considered to be a complication of existing essential hypertension. Arteriosclerotic plaques in the course of the main renal artery or one of its branches were found in 23 hypertensive patients. Of these, the lesions in 6 were bilateral and in 17 were unilateral. The roentgenographic findings were confirmed by operation or by autopsy in 15 of the 23 patients. Six of these 23 patients also showed poststenotic aneurysmal dilatation of the renal artery (see figure) just distal to the point of obstruction. This is considered to be a degenerative process caused by the locally increased lateral pressure distal to the obstruction. The elastic lamella and media of the artery gradually deteriorate, allowing aneurysmal dilatation which, in itself, becomes a hazard because of the possibility of rupture.[10]

TABLE 1.—*Aortographic Diagnoses in Thirty Hypertensive Patients*

| Aortographic Diagnosis | Unilateral | Bilateral | Total |
|---|---|---|---|
| Arteriosclerotic plaque | 17(12*) | 6(3*) | 23 |
| Stenosis due to fibrous intimal proliferation | 1* | 1* | 2 |
| Embolus | 1 | 0 | 1 |
| Thrombosis | 1* | 0 | 1 |
| Arteriosclerosis associated with chronic pyelonephritis | 2* | 1* | 3 |

*Patients in whom diagnosis was proved by operation or autopsy.

Narrowing of the renal arteries in young hypertensive patients may be caused by fibrous intimal proliferation. During this two-year period two such patients, respectively 15 and 19 years of age, were recognized as having this lesion, which was bilateral in one of them.

One patient who became temporarily hypertensive from an embolus to the renal artery was shown to have partial occlusion of the renal artery by aortography six weeks after the renal injury had occurred. One patient had thrombosis of the renal artery followed in three weeks by a fulminating malignant hypertension.[11] The aortogram showed complete obstruction of the main artery but a branch proximal to the obstruction supplied the lower half of the kidney thereby preserving surprisingly good function, as shown by intravenous urography, in spite of the infarction of the upper pole of the kidney.

Included in this series are three patients who showed focal or generalized renal artery disease associated with unilateral or bilateral segmental chronic pyelonephritis. The renal vasculature of all was contracted in areas of parenchymal loss, with a plaque in the main renal artery of one.

## Intravenous Urographic Findings

With unilateral renal artery occlusive disease, the size and excretory function of the involved kidney were considered to be normal and similar to those of the other kidney in 11 of 22 instances; in the other 11 patients the size and function were reduced on the affected side and, in a few instances, the kidney was shown to be practically without excretory function by both intravenous urography and attempted collection of urine from the kidney. With bilateral renal artery obstruction the intravenous urogram showed kidneys of equal size and function in five of eight patients, but in three patients there was reduction in size or function on one side. These facts indicate that intravenous urography is not a uniformly satisfactory means of detecting disease of the renal artery as a cause of hypertension.

Qualitative and quantitative renal function tests have been done on most of the hypertensive patients selected for aortography. The results of these will be reported elsewhere. At present, the information gained from renal function tests is of value to the extent that it corroborates what has been found by intravenous urography and renal angiography.

## Results of Treatment

Of the 30 patients who were found to have hypertension associated with renal artery disease, 19 were subjected to various surgical procedures; the postoperative condition of these 19 patients is summarized in table 2.

TABLE 2.—*Findings in Nineteen Patients After Operation for Renal Artery Disease Causing Hypertension*

| Length of Follow-up, Yr. | Postoperative Findings | Patients, No. | Operation |
|---|---|---|---|
| >1 | Blood pressure normal | 5* | Nephrectomy (4); renal artery grafts, bilateral (1) |
| | Malignant hypertensive syndrome reversed; blood pressure lower but not normal | 2 | Nephrectomy (2) |
| <1 | Blood pressure normal | 6 | Nephrectomy (6) |
| | Condition improved, but blood pressure not normal | 4 | Nephrectomy (2); endarterectomy (1); dilatation renal artery orifice (1) |
| | Death from renal failure† | 1 | Attempted endarterectomy (1) |
| | Death from postoperative hemorrhage | 1 | Renal artery graft (1) |

* Three more patients seen before 1955 have been previously reported.[9]
† Incurable arteriosclerosis of renal artery and its branches in solitary kidney.

Seven patients have been followed for more than one year; five of these have had consistently normal blood pressure and two have had remission of malignant hypertension and lowering of blood pressure but not to normal levels. Six of these patients were subjected to nephrectomy; one patient had bilateral renal artery grafts to replace his own stenotic renal arteries.[9]

Of those patients who have been followed less than one year, six have had restoration of normal blood pressure; these patients were subjected to nephrectomy. In four the hypertensive vascular disease has ameliorated but the blood pressure has not been restored to normal; two of these four had nephrectomy. One patient had endarterectomy of an eccentric plaque in the right renal artery; he has been advised to have the left kidney removed because an obstructive plaque has caused serious reduction in its size and function. The fourth patient had dilatation of the aortic orifice of the renal artery, because of an occluding plaque at this site.

One patient died of renal failure three weeks after an attempted endarterectomy of arteriosclerotic plaques in the main renal artery and all major branches of the renal artery of a congenital solitary kidney. The other patient died from postoperative hemorrhage 10 days after a renal artery graft had been inserted to the right kidney; this hemorrhage occurred at the point of end-to-side anastomosis of the graft to the aorta, and a new technique has been devised which avoids this technical defect.[12]

Of the 11 remaining patients of the group of 30 who had renal artery disease associated with hypertension, 7 are currently taking antipressor drugs and their condition is either improved or unchanged; surgery has been advised in several cases but deferred for various reasons. The one patient with renal artery embolism and transient hypertension was treated with anticoagulants and has subsequently demonstrated partial return of function of the kidney. Three patients died of complications of arterial and arteriolar disease; two of these had bilateral renal artery obstructive lesions.

Nephrectomy is the operation of choice for relief of a hypertensive state caused by unilateral renal artery obstructive disease when the involved kidney shows distinct atrophy and reduced function. Other procedures are available when the involved kidney has been shown to be normal in size and function and may be obligatory in patients with bilateral obstructive lesions. These consist of (1) segmental aortic homografts with attached renal arteries for obstruction of the first portion of one or both renal arteries, (2) excision of constricted segments and end-to-end anastomosis of the renal artery, and (3) endarterectomy for eccentric plaques obstructing the lumen of the renal artery.

### Treatment in Renal Artery Disease

The presence of hypertensive vascular disease was established in all of these patients by repeated preoperative blood pressure determinations and evaluation of the eye grounds. It has been maintained by Smith [13] that in order to satisfy reasonable criteria for cure of a definitely established hypertensive state by unilateral nephrectomy, the blood pressure must be 140/90 mm. Hg or below and remain within this limit for at least one year postoperatively. These are arbitrary figures, and it now is recognized that the systolic and diastolic pressures rise with increasing age.[14] At 45 years of age, for example, normal blood pressure averages 140/80 mm. Hg; however, at 60 years of age the average normal blood pressure is about 160/90 mm. Hg. The basis of present treatment of hypertensive vascular disease is the lowering of the blood pressure; however, administration of antipressor drugs to a hypertensive patient, particularly if he has the syndrome of malignant hypertension, rarely causes the blood pressure to return to normal levels although there is a remission of arteriolar disease. As indicated in table 2, this has also been observed in some patients who have had the malignant hypertensive syndrome resulting from renal artery obstructive lesions. Depending in part on the duration of hypertension, removal of the involved kidney brings about a prompt or gradual remission of the malignant hypertensive state with lowering of the blood pressure, but not always to normal levels. We believe that criteria of therapeutic effects should be extended to include remission of the syndrome of malignant hypertension and of arteriolar disease, with less emphasis on the actual blood pressure levels.

Antipressor drugs that are currently available will produce lowering of blood pressure in patients with true renal hypertension, provided they are used correctly and in sufficient amounts. In patients who have long-standing hypertensive disease prior to nephrectomy for unilateral obstruction, we have used antipressor drugs postoperatively, because we believe it is in the best interests of the patient to bring about a prompt reversal of the hypertensive state; as the patient improves and the blood pressure remains low, or close to normal levels, the antipressor drugs are gradually withdrawn.

### Summary and Conclusions

In the two-year period, 1955 and 1956, 104 hypertensive patients were subjected to aortography; 30 patients were found to have unilateral or bilateral obstructive lesions of the renal artery. The majority of these were considered to be either the primary cause of the hypertensive disease or factors aggravating existing essential hypertension. Most of the obstructive lesions were arteriosclerotic plaques; there were six instances of poststenotic aneurysmal dilatation. It is believed that the conditions of these patients represent the clinical counterpart of the type of hypertension produced experimentally by Goldblatt and co-workers.[1]

Currently the most important means of recognizing renal artery disease is renal angiography accomplished by means of translumbar aortography. The

misinterpretation of inadequate renal angiograms is the main source of error in diagnosis. Both intravenous urography and renal function tests may have normal findings even in the presence of either unilateral or bilateral obstructive renal artery disease, but in half of the patients these tests showed specific alterations in size or function of the kidneys.

Nineteen of the 30 patients were subjected to surgical treatment. Of those followed for more than one year, five have normal blood pressure and two have had reversal of malignant hypertensive syndrome, although their blood pressure is not normal. Of those followed less than one year, blood pressure has returned to normal in six; their conditions improved but blood pressure did not become normal in four. Death occurred in two patients postoperatively, one from renal failure and the other from hemorrhage.

The present report extends to 35 the number of patients seen here because of hypertension associated with renal artery disease. Five patients, of whom four have been previously reported,[7] were seen before 1955. (Seventeen additional patients have been treated during the first 10 months of 1957.)

It is hoped that a reliable means of detecting the presence of renal pressor substances in hypertensive patients will become available to select those who have renal hypertension; renal angiography can then be used only when indicated.

The significance of renal artery disease is twofold: first, it may be the cause of hypertensive vascular disease; and second, the lesion itself may have inherent danger to the patient, as, for example, the poststenotic aneurysm which may rupture spontaneously. In order to justify surgical treatment of renal artery lesions one must first establish that the lesion is physiologically active and the potential cause of progressive hypertensive vascular disease by appropriate study, which should include careful evaluation of the history, the intravenous urogram, renal function tests, and renal angiography; that it may be the cause of progressive atrophy of the kidneys; or that the lesion itself may be the cause of symptoms or be of potential danger to the patient.

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References

1. Goldblatt, H.; Lynch, J.; Hanzal, R. F.; and Summerville, W. W.: Studies on Experimental Hypertension: Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, J. Exper. Med. **59:**347-379 (March) 1934.

2. Braun-Menendez, E.; Fasciolo, J. C.; Leloir, L. F.; and Munoz, J. M.: La substance hypertensive extraite du sang des reins ischémiés, Compt. rend. Soc. de biol. **133:**731-733, 1940; Substance Causing Renal Hypertension, J. Physiol. **98:**282-298 (July 24) 1940. Page, I. H., and Helmer, O. M.: Crystalline Pressor Substance (Angiotonin) Resulting from Reaction Between Renin and Renin-Activator, J. Exper. Med. **71:**29-42 (Jan.) 1940.

3. Blackman, S. S., Jr.: Arteriosclerosis and Partial Obstruction of Main Renal Arteries in Association with "Essential" Hypertension in Man, Bull. Johns Hopkins Hosp. **65:** 353-375 (Nov.) 1939. Richardson, G. O.: Atherosclerosis of Main Renal Arteries in Essential Hypertension, J. Path. & Bact. **55:**33-39 (Jan.) 1943.

4. Lisa, J. R.; Eckstein, D.; and Solomon, C.: Relationship Between Arteriosclerosis of Renal Artery and Hypertension: Analysis of 100 Necropsies, Am. J. M. Sc. **205:**701-703 (May) 1943.

5. Yuile, C. L.: Obstructive Lesions of Main Renal Artery in Relation to Hypertension, Am. J. M. Sc. **207:**394-404 (March) 1944.

6. Bumpus, F. M.; Schwarz, H.; and Page, I. H.: Synthesis and Pharmacology of the Octapeptide Angiotonin, Science **125:**886-887 (May 3) 1957.

7. Poutasse, E. F.: Occlusion of Renal Artery as Cause of Hypertension, Circulation **13:**37-48 (Jan.) 1956.

8. Enos, W. F.; Holmes, R. H.; and Beyer, J.: Coronary Disease Among United States Soldiers Killed in Action in Korea: Preliminary Report, J. A. M. A. **152:**1090-1093 (July 18) 1953.

9. Poutasse, E. F.; Humphries, A. W.; McCormack, L. J.; and Corcoran, A. C.: Bilateral Stenosis of Renal Arteries and Hypertension: Treatment by Arterial Homografts, J. A. M. A. **161:**419-423 (June 2) 1956.

10. Poutasse, E. F.: Renal Artery Aneurysm: Report of 12 Cases, 2 Treated by Excision of Aneurysm and Repair of Renal Artery, J. Urol. **77:**697-708 (May) 1957.

11. Poutasse, E. F., and Dustan, H.: Urologic Causes of Hypertension: I. Hypertension due to Renal Artery Lesions, Cleveland Clin. Quart. **23:**3-15 (Jan.) 1956.

12. Humphries, A. W., and Poutasse, E. F.: Technique of Arterial Grafting for Renal Artery Stenosis Causing Hypertension, Surg. Gynec. & Obst., to be published.

13. Smith, H. W.: Unilateral Nephrectomy in Hypertensive Disease, J. Urol. **76:**685-701 (Dec.) 1956.

14. Master, A. M.; Dublin, L. I.; and Marks, H. H.: Normal Blood Pressure Range and Its Clinical Implications, J. A. M. A. **143:**1464-1470 (Aug. 26) 1950. Pickering, G. W.: High Blood Pressure, New York, Grune & Stratton, Inc., 1955.

**Life on Other Planets.**—That life will originate and evolve wherever the temperature, the inorganic substances, and the incident radiation are of the sorts that have existed on our earth is highly probable in the light of current geochemical, physicochemical, and biochemical studies. Supporting this inference is the recent strengthening of the evidence, derived from its color changes, that life has developed on Mars also, although on that planet nature has obviously been far less bountiful than on our earth in allowing the multiplication and evolution of life. . . . Thus, since our own galaxy alone contains tens of billions of suns, and there are many millions of these galaxies of suns in our view, it is probably a very gross underestimate to say that many trillions of planets besides our own are at this moment serving as the abode of life.—H. J. Muller, Man's Place in Living Nature, *The Scientific Monthly*, May, 1957.

# ECZEMATOUS COMPLICATIONS IN TREATMENT OF TUBERCULOSIS

## ERUPTIONS RESULTING FROM COMBINED AMINOSALICYLIC ACID, DIHYDROSTREPTOMYCIN, AND ISONIAZID THERAPY

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*Eczematous eruptions in patients being treated with chemotherapeutic agents for tuberculosis resemble so closely the common skin diseases that a definite diagnosis can be established only after prolonged observations. Aminosalicylic acid appears to be the chief cause of the eruptions due to the particular medications for tuberculosis. Attempt was made to control the eruption without stopping the medication until resolution of the disease was complete. Patients with these eczematous complications are easily sensitized to topical medications.*

In 1953 we became aware that the incidence of certain eczematous eruptions was higher among hospital inpatients under treatment for tuberculosis than among those hospitalized for other reasons. The chemotherapeutic agents with which these patients were being treated were aminosalicylic acid, dihydrostreptomycin, and isoniazid in various combinations. From close observation of the clinical material over a three-year period, three dermatological pictures have emerged, which are described below.

### Forms of Eczematous Eruptions

*Eruptions Resembling Nummular Dermatitis.*—The initial lesions in the form resembling nummular dermatitis (12 cases) were closely aggregated, pruritic, erythematous papules or papulovesicles, which coalesced rapidly to form coin-shaped, eczematous plaques that varied in diameter from 1 to 25 cm. or more. These lesions varied in number from 1 to as many as 60. The maximum size of each could usually be predicted early from the area occupied by the initial, discrete papules, and although new lesions appeared from time to time, the older ones showed little tendency to extend peripherally. The sites most commonly involved were the lower parts of the leg, especially about the malleoli, the extensor aspects of the arms, the anterior axillary folds, the antecubital fossae, the dorsum of the hands and feet, the chest, and the back. The lesions were frequently localized in areas previously occupied by other dermatoses. They were quite likely to occur, for example, in areas of stasis dermatitis, dyshidrosis, dermatophytosis, and dermatitis venenata, even when those conditions had been absent for many years. When the lesions had been present for some time, the common signs of chronicity often made their appearance—hyperpigmentation, accentuation of normal skin markings, and thickening—so that the areas gradually assumed the form of lichen chronicus simplex (or neurodermatitis circumscripta).

*Eruptions Resembling Seborrheic Dermatitis.*—The earliest observable change in the form resembling seborrheic dermatitis (six cases) was the appearance of a fine, furfuraceous scale on the scalp, especially at the hairline. The external auditory meatus and retroauricular areas were also involved early. In a few days to several months, erythema appeared, and the eruption spread to the eyebrows, the nasolabial folds, and occasionally the presternal area. The lesions then became moist, so that the picture was in every respect like the exudative phase of seborrheic dermatitis, except for response to treatment. Itching was often intense, and complicating pyoderma was common.

*Eruptions Resembling Both Nummular and Seborrheic Dermatitis.*—The commonest form was the mixed eruption resembling both nummular and seborrheic dermatitis (19 cases). The latter eruptions (described above) often occurred simultaneously, lending further support to the contention that a common cause was at work. In two such cases, the intervening areas of normal skin became erythematous, and the initial distinctive changes were swallowed up in a generalized exfoliative dermatitis.

The average age of the 37 patients with the three forms of eczematous eruptions resulting from combined aminosalicylic acid, dihydrostreptomycin, and isoniazid therapy was 59 years. The average interval between the administration of the drugs and the onset of the eruption was 8 months; the shortest interval was 2 days and the longest, 18 months. Men were affected three times as often as women.

### Relationship to Tuberculosis Therapy

Since the eczematous eruptions in patients treated with chemotherapeutic agents resembled so closely the common skin diseases, nummular

Read before the Section on Dermatology at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

dermatitis and seborrheic dermatitis, a definite relationship to the tuberculosis medications could be established only on prolonged observations. All cases were excluded from the study which showed evidence of nummular dermatitis or seborrheic dermatitis prior to the administration of the drugs. Those cases which showed no involution on withdrawing all the chemotherapeutic agents were assumed to be the ordinary forms of these diseases and due to other causes. Errors introduced by these procedures would, of course, tend to minimize the role of the drugs, making the positive findings more significant. Lacking any accurate estimate of the incidence of nummular dermatitis or seborrheic dermatitis in the population as a whole, we felt that the drugs could be incriminated beyond doubt in no other way.

By observing the combination of aminosalicylic acid, dihydrostreptomycin, and isoniazid with which these patients were being treated at the time the eruptions began and by observing the progress or involution of the eruptions on selective withdrawal of the various drugs, we were able to assess the role of each medication in initiating or prolonging the cutaneous lesions. This method is analogous to solving an algebra problem by simultaneous equations. The results are summarized in tables 1 and 2. From these tables it will be seen that the following responses occurred: 1. No eczematous complication arose unless either aminosalicylic acid or dihydrostreptomycin was administered. 2. No eczematous complication disappeared when the administration of aminosalicylic acid was continued. 3. Eczematous complications sometimes persisted and sometimes involuted when aminosalicylic acid was stopped and dihydrostreptomycin was continued. 4. Administering or withholding isoniazid had no effect on the appearance of the skin lesions. It can be concluded then that aminosalicylic acid is the chief

TABLE 1.—*Role of Chemotherapeutic Agents in Initiating Eczematous Eruptions in Patients with Tuberculosis*

| Drugs Administered* | | | Eczematous Complications Began |
|---|---|---|---|
| PAS | ..... | ..... | No data |
| PAS | DHS | ..... | Yes |
| ..... | DHS | ..... | No data |
| ..... | DHS | INH | Yes |
| PAS | ..... | INH | Yes |
| ..... | ..... | INH | No data |
| PAS | DHS | INH | Yes |

* PAS = aminosalicylic acid; DHS = dihydrostreptomycin; INH = isoniazid.

cause of these cutaneous lesions, that dihydrostreptomycin is an occasional cause but more commonly a prolonging factor, and that isoniazid is not involved.

*Etiology.*—The reactions here described differ completely from the many toxic and allergic manifestations which have been attributed to these drugs. Eosinophilia was met with seldom and was only of a significant degree in the two cases of exfoliative dermatitis. Simple epidermal sensitization was ruled out by the absence, in 10 patients tested, of patch tests positive to the drugs. The way in which aminosalicylic acid causes such skin lesions remains unknown. Bacteriological studies have provided some insight perhaps into the role of dihydrostreptomycin as a cause and as a common prolonging factor. A coagulase-positive Micrococcus pyogenes var. aureus was cultured from the lesions

TABLE 2.—*Role of Chemotherapeutic Agents in Prolonging Eczematous Eruptions in Patients with Tuberculosis*

| Drugs Continued After Onset of Eruption | | | Eczematous Complications Subsided |
|---|---|---|---|
| PAS | ..... | ..... | No |
| PAS | DHS | ..... | No |
| ..... | DHS | ..... | Sometimes |
| ..... | DHS | INH | Sometimes |
| PAS | ..... | INH | No |
| ..... | ..... | INH | Yes |
| PAS | DHS | INH | No |

in 20 of these cases. Sixteen of these strains were resistant in vitro to dihydrostreptomycin. It might be conjectured that those micrococci resistant to dihydrostreptomycin were able to flourish in eczematous lesions because they had been freed from the competition of other skin flora sensitive to the antibiotic. The chief effect of aminosalicylic acid has been to delay the appearance of dihydrostreptomycin resistance in the tubercle bacillus. It also has some direct antibacterial action. The mechanisms involved are obscure, but in some way aminosalicylic acid interferes with the oxygen metabolism of the organism. The substance may have similar effects on other organisms, such as those which normally inhabit the skin, again reducing the natural obstacles which the micrococci found in these eczematous eruptions would otherwise encounter. This concept is in accord with that school of thought which holds that ordinary nummular dermatitis represents a circumscribed reaction of the skin to the metabolic products of micrococci which are able to multiply in areas of skin damaged by alkali, drying, or other agents as yet undiscovered. A bacterial cause for seborrheic dermatitis too has long been suspected, although proof is lacking. It must be added, however, that administration of antibiotics to which the micrococci cultured were sensitive was not of much benefit.

Since the causes of neither nummular dermatitis nor seborrheic dermatitis are definitely known, these cases might even be regarded as examples of those two diseases in which the initiating and prolonging factors (aminosalicylic acid and dihydrostreptomycin) have been established. Becker and Obermayer [1] in their textbook in 1947 were the first to note the increase in the incidence of eczematous eruptions among tuberculosis patients under treatment. We were unaware of this observation until the report of Becker and Mounce in 1957,[2] in which these complications were dealt with more extensively. Much of the clinical material which they have classified as neurodermatitis, dry and exuda-

tive, seems to correspond to our own. Allowances must be made, of course, for differences of opinion regarding the nomenclature of eczematous diseases. These workers, however, did not consider any of the seborrheic states which they observed to be related to the chemotherapy, and they included as reactions to the drugs other "neurodermatoses," such as dyshidrosis, pruritus ani, and alopecia areata, a point of view with which we cannot agree. They concluded that these eruptions were the results of neurotoxic effects of the drugs, dihydrostreptomycin and isoniazid, and they dismissed aminosalicylic acid as a cause. These conclusions are in sharp contrast to our own.

### Management

In all cases an initial attempt was made to treat the eczematous eruptions by topical means alone, without stopping the administration of any of the tuberculosis drugs. In no instance did the eruptions clear while the administration of aminosalicylic acid was continued, but by the use of wet compresses (Burow's solution) and mild antipruritic ointments, symptoms could often be controlled to the point where chemotherapy could be continued, at least for a few weeks, sometimes until the resolution of the tuberculosis was complete. The seborrheic reactions did not respond to suspensions of selenium disulfide or sodium sulfacetamide, which are so often effective in ordinary seborrheic dermatitis. If symptoms became unbearable to the patient or if alarming extension of the eruption occurred, aminosalicylic acid was withdrawn, and the other chemotherapeutic agents used. On this regimen a number of the reactions subsided. Those patients in whom the eruption continued to spread or produce intolerable itching and burning, even after the administration of aminosalicylic acid was discontinued, presented the most difficult problem. They were sometimes individuals with extensive, uncontrolled tuberculosis to whom chemotherapy was essential for life. Four such patients, including two with generalized exfoliative dermatitis, were treated by combining steroids with the chemotherapeutic agents. Prednisone was used in doses of 10 mg. two to four times daily. The response of the skin lesions was rapid in each instance, and maintenance doses of 5 to 10 mg. daily were sufficient to keep the skin clear enough for the chemotherapy to be continued indefinitely. Striking improvement in the pulmonary lesions also took place. When an attempt was made to discontinue the steroid without also stopping the administration of aminosalicylic acid and dihydrostreptomycin, a prompt relapse occurred.

A word of caution is in order. Patients with these eczematous complications are easily sensitized to topical medications. The application of substances known to have a high index of sensitization should be avoided. Heading the list should be such agents as sulfonamides, penicillin, "caine" derivatives, nitrofurazone compounds, and ammoniated mercury.

### Summary

In 37 patients with tuberculosis under treatment with dihydrostreptomycin, aminosalicylic acid, and isoniazid in various combinations, eczematous reactions appeared which resembled nummular dermatitis, seborrheic dermatitis, and a combination of both. By observing the drugs being given when the eruptions began and the response of the eruptions to selective withdrawal of the drugs, it was concluded that aminosalicylic acid is the chief cause, that dihydrostreptomycin is an occasional cause and sometimes a prolonging factor, and that isoniazid is not involved. From the frequent finding of dihydrostreptomycin-resistant micrococci in the skin lesions, it was postulated that a disturbance in the normal bacteriological flora of the skin might underlie these eruptions. Management includes an initial attempt at control by topical means, the withdrawal of aminosalicylic acid, or, in severe cases, the judicious use of steroids in combination with the chemotherapeutic agents.

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### References

1. Becker, S. W., and Obermayer, M. E.: Modern Dermatology and Syphilology, ed. 2, Philadelphia, J. B. Lippincott Company, 1947.

2. Becker, S. W., and Mounce, S. H.: Dermatoses in Patients Receiving Chemotherapy for Systemic Tuberculosis, A. M. A. Arch. Dermat. **75**:333-344 (March) 1957.

**Treatment of Relapse State of Typhoid Fever.**—Following the introduction of chloramphenicol in the treatment of typhoid fever it soon became apparent that, in spite of improvement in the clinical state which was usually manifest, there was no corresponding improvement in the relapse rate. . . . The very striking differences in the relapse rates of patients with typhoid fever treated with short term and with long term courses, from the day of defervescense, seem to indicate that chloramphenicol has some effect on the immune response. . . . The incidence of relapse in typhoid fever treated with chloramphenicol is dependent on the period of time during which therapy is continued. Where this is less than about seven days very high relapse rates may be experienced. The relapse state is probably initiated by intracellular forms of *S. typhi* present in reticuloendothelial cells. It is suggested that chloramphenicol promotes phagocytosis of viable organisms and that this creates a reservoir of tissue relapse rates in those patients who are inadequately treated.—K. C. Watson, The Relapse State in Typhoid Fever Treated with Chloramphenicol, *The American Journal of Tropical Medicine and Hygiene*, January, 1957.

# POSTOPERATIVE HYPOTENSION

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*Hypotension, defined either as systolic pressure below 90 mm. Hg in an initially normotensive patient or as systolic pressure more than 40 mm. below the preoperative readings in a hypertensive patient, developed in 180 out of 5,463 patients observed in a hospital recovery room. Onset of hypotension could usually be explained as cardiovascular, respiratory, pharmacological, neurogenic, hematologic, or humoral in origin, and consideration of these six possibilities was helpful in deciding on appropriate treatment. Four cases are cited to illustrate, respectively, the possibilities of cardiovascular origin (myocardial infarction during operation), pharmacological origin (cyclopropane and muscle relaxants), neurogenic origin (genitourinary surgery), and humoral origin (interruption of long-continued hormone therapy). In the fourth case recognition of the cause led to the administration of hydrocortisone intravenously with prompt restoration of a normal blood pressure. The authors believe, however, that the most common cause of postoperative hypotension is that group of hematological factors which include transfusion reactions, hemolysis due to distilled water during transurethral resections, and acute or chronic loss of blood.*

The circulatory sequelae to operative intervention consist of a subtle, and frequently most baffling, group of pathophysiological processes. The origins of these circulatory problems are frequently diverse and, more often than not, reflect the interaction of two or more of these mechanisms upon the organism's circulatory homeostasis. Interacting circulatory adjustments which serve to maintain a normal level of blood pressure include sufficient cardiac output to permit efficient circulation to meet the metabolic demands of tissues, adequate constriction of arterioles to maintain peripheral resistance, and the presence of an effective quantitative and qualitative volume of circulating blood. Disturbances or imbalance of any one or combinations of these processes cause a fall of arterial pressure.[1] Early recognition of all etiological factors which lead to onset of circulatory failure constitutes a major responsibility of anesthesiologists. Ability to detect the underlying cause and the patient's capacity to tolerate hypotension depends upon the thoroughness of preoperative evaluation, the efficiency with which abnormalities are corrected before and during operation, and the precise judgment exercised with regard to diagnosis and therapy administered in emergency during the postoperative period. Establishment of a precise diagnosis, and therefore the institution of adequate therapy, must be approached as a problem in differential diagnosis. As in any diagnosis, the predominant sign or symptom will be the single most important positive fact about which all the other data must be assembled, considered, sorted, and either retained or discarded in the construction of the eventual definitive diagnosis.

## Types of Patients and Etiological Factors

Hypotension is without question the most common circulatory sign to be encountered during the postoperative period. During the period between Jan. 1, 1957, and May 15, 1957, 5,463 patients were received in the recovery room at the Hartford Hospital. One hundred eighty of the patients included in this preliminary survey (or 1 patient out of every 31) were hypotensive during the recovery period, that diagnosis being based upon a fall in systolic blood pressure below 90 mm. Hg in the normotensive individual or a substantial fall in the order of 40 to 60 mm. Hg in hypertensive patients. The classification of these hypotensive episodes according to the types of surgical patients is of considerable interest: Sixty-two, or 34.6%, of the patients had undergone general surgical procedures; 92, or 51.4%, had been subjected to gynecologic operations; 5, or 2.8%, became hypotensive after orthopedic procedures; 8, or 4.4%, had been subjected to neurosurgical operations; and 12, or 6.7%, had undergone genitourinary procedures.

More important than the types of patients who became hypotensive were the underlying etiological factors producing the syndrome. Postoperative hypotension could be classified into six great groups according to etiological factors: hypotension of cardiovascular origin; hypotension of respiratory origin; hypotension of pharmacological origin; hypotension of neurogenic origin; hypotension of hematological origin; and hypotension of humoral origin. Admittedly, the classification is an artificial one, against which valid arguments might be raised. Admittedly, also, combinations of these etiological factors may frequently be working together to produce the patient's circulatory distress. The classifi-

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Read before the Section on Anesthesiology at the 106th Annual Meeting of the American Medical Association, New York, June 6, 1957.

cation does, however, offer a framework upon which to construct the important clues which must be appreciated in order to achieve a prompt diagnosis and to treat postoperative hypotension intelligently.

### Hypotension of Cardiovascular Origin

Factors which decrease cardiac output, produce vasodilatation, and establish deviations from the normal of blood volume are fundamental considerations in the production of hypotension.[2] The cardiovascular system itself (and particularly the heart itself) thus often is the underlying problem of the hypotensive state due to myocardial insufficiency, coronary occlusion, cardiac arrhythmias, or cardiac failure.

Case 1.—This patient, a 74-year-old man, entered the hospital because of symptoms of dysuria and frequency of six months' duration. System review revealed that the patient had been subject to "one-flight dyspnea" for the past four to five years, had suffered occasional precordial pain which was relieved by glyceryl trinitrate (nitroglycerin), and had been taking one tablet of digitalis each day for several years. Physical examination revealed a markedly increased anterior to posterior diameter of the chest, distant pulmonary sounds, an enlarged heart with grade 1 apical systolic murmur and grade 2 to grade 3 aortic murmur, severe osteoarthritis, and an enlarged prostate which was firm and presented no masses.

Cystoscopy was performed with the patient under spinal analgesia and utilizing 40 mg. of procaine hydrochloride and 8 mg. of tetracaine (Pontocaine) hydrochloride; it revealed a tumor in the bladder which, on pathological examination, was demonstrated to be a papillary carcinoma, grade 1. The patient was not considered a good operative risk, but it was felt that his condition warranted performance of segmental resection of the bladder. Premedication consisted of chloral hydrate, 7½ grains (0.5 Gm.) two hours prior to operation, and meperidine (Demerol) hydrochloride, 100 mg., and atropine sulfate, 0.4 mg. one hour prior to operation. Induction was accomplished with 8 cc. of 2.5% thiopental (Pentothal) sodium, and anesthesia was maintained with cyclopropane in a closed carbon dioxide absorption system. Intubation was accomplished during the relaxation provided by a 40-mg. dose of succinylcholine chloride, and the operative procedure was commenced. After exploration of the bladder the surgeons requested permission to employ the cautery, and maintenance anesthesia was changed to nitrous oxide-oxygen, 5 liters to 2 liters flow, by the semiclosed technique. Approximately one hour after the procedure started a brief period of bradycardia interrupted the presence of moderate tachycardia. After a further half-hour, there was a precipitous and unexplained drop in the blood pressure from 170/80 to 80/50 mm. Hg and recurrence of the bradycardia. The blood pressure was restored promptly to normal by the intravenous injection of a small dose of a vasopressor agent.

In the recovery room, after operation, the blood pressure again dropped to 40/0 mm. Hg. As before, the hypotension was associated with a marked bradycardia. Administration of atropine sulfate, 1/50 grain (1.2 mg.), intravenously relieved the bradycardia, but a second intravenous administration of a vasopressor was ineffectual. At this point an electrocardiogram revealed a recent posterior myocardial infarction. Studies of blood volume revealed a deficit of 570 cc. of red blood cell volume, and 250 cc. of packed red blood cells was administered. The patient made a slow recovery during the next two days, but then another hypotensive episode occurred, which was accompanied by severe substernal pain and the development of pericardial and pulmonary friction rubs. The patient again recovered slowly from this second coronary occlusion, but three weeks postoperatively he developed ankle edema, dyspnea, and rales in the chest and died in cardiac failure. Postmortem examination revealed arteriosclerotic heart disease, with coronary sclerosis and occlusion and recent myocardial infarction. There was calcific aortic stenosis and calcific mitral sclerosis, as well as fibrinous pericarditis and pulmonary atelectasis.

*Comment.*—Onset of bradycardia and hypotension were the warning signals of the occurrence of myocardial infarction, which was complicated during the later postoperative period by an extension of the original infarct and development of myocardial failure.

### Hypotension of Respiratory Origin

Onset of circulatory failure has been encountered owing to the presence of respiratory obstruction, atelectasis, mediastinal shift, and pneumothorax following performance of radical dissection of the neck and thoracotomy. Prompt recognition and treatment saved one patient who developed tension pneumothorax and tension pneumoperitoneum after repair of a diaphragmatic hernia. Compression due to postoperative hemorrhage and collapse of the trachea resulting from demineralization and loss of support of the cartilagenous rings have also created emergent situations immediately after thyroidectomy. However, one unique and frequently encountered type of hypotension of respiratory origin is "postcyclopropane shock."

Case 2.—This patient, a 37-year-old housewife, was admitted to the hospital for cholecystectomy. She had complained of right upper quadrant pain after meals for the past nine months, frequent belching, and intolerance to fatty foods. Physical examination revealed marked obesity, but the patient was otherwise essentially normal. A gallbladder series revealed cholelithiasis.

The patient received premedication with secobarbital (Seconal), 100 mg. two hours prior to operation, and scopolamine hydrobromide, 0.4 mg. one hour before operation. Anesthesia was induced with 7 cc. of a solution of thiopental sodium in 2.5% concentration and was continued by the administration of cyclopropane by the closed-circle absorption technique. A 9-mg. dose of curare was administered prior to endotracheal intubation, and a second injection of curare in 3-mg. dosage was made 40 minutes later prior to closure of the peritoneum. Respirations were assisted throughout operation, and the respiratory exchange was considered adequate at the termination of the procedure. The pulse rate remained close to 60 beats per minute, and the blood pressure was essentially normal throughout operation.

Shortly after being admitted to the recovery room, the patient was noted to have a blood pressure of 65/40 mm. Hg. The pulse was 64 beats per minute, and the skin was warm, pink, and dry. Reflexes were present, but the patient was not yet fully awake. The combination of cyclopropane anesthesia, hypotension, a warm dry skin, and bradycardia was considered pathognomonic for the syndrome of "cyclopropane shock." Treatment was limited to the administration of fluids given intravenously and oxygen by open-top mask. The patient made an uneventful recovery, normotension being restored within a 90-minute period.

*Comment*—It is worth pointing out that the use of muscle relaxants may enhance the development of the "syndrome of cyclopropane shock" despite attempts to rid the body of excessive accumulations of carbon dioxide by manual assistance to respiratory effort.

### Hypotension of Pharmacological Origin

Hypotension of pharmacological origin is a category generally attributable directly to the anesthetic period and may be due to either the intentional or the

purely unintentional administration of certain drugs. For instance, the administration of hexamethonium or trimethaphan (Arfonad) camphorsulfonate in the techniques of "controlled hypotension" may lead to a persistent hypotension in the postoperative period. In the same manner, the use of induced hypothermia may result in a persistent hypotension, which is accentuated by the release of acid metabolites into the blood stream as the patient warms from a low temperature of 86 F (30 C) toward the normal temperature of 98.6 F (37 C). Hypotension may also occur quite unexpectedly in the postoperative period because of the pharmacological action of drugs which have been administered as premedication, as adjuncts to anesthesia, or for the control of postoperative pain. Administration of opiates or opium derivatives during the immediate postoperative period is a frequent cause of hypotension. These therefore should be employed cautiously. The phenothiazine derivatives, which have received widespread usage recently, are particularly apt to produce vasodilatation and postural hypotension. The presence of vasomotor paralysis during the postanesthetic period may make it impossible for the normal protective reflex mechanisms to accelerate cardiac activity, augment the force of myocardial constrictions, or promote onset of vasoconstriction. This is an important factor in the development of hypotension when patients are moved or their position changed.

### Hypotension of Neurogenic Origin

Hypotension of neurogenic origin may follow extensive trauma or, under certain circumstances, may reflect reflex reaction to pain arising in specific regions of the body. Neurogenic hypotension may also occur as the result of the perforation of an abdominal viscus, the presence of peritonitis, or bacteremia.

Case 3.—This patient, a 74-year-old man, had a sudden onset of chills, fever, and severe hypotension two days after the performance of a transurethral resection and six hours after the removal of a retention catheter. Studies of blood volume revealed a deficit of 16% in red blood cell volume. Administration of fluids and blood did not alter the hypotensive state. However, since the normal patient does not exhibit signs of shock until there has been a 30% reduction of blood volume, other etiological factors were considered. The presence of 4+ bacteremia due to Escherichia coli was confirmed by blood culture. Antibiotic therapy resulted in recovery.

### Hypotension of Hematological Origin

The most common cause of hypotension in the postoperative period is that group of hematological factors which include transfusion reactions, hemolysis due to distilled water during transurethral resection, but, most important of all, acute and chronic loss of blood. Determination of blood volume has proved to be invaluable in the diagnosis and treatment of postoperative circulatory abnormalities. Within a period of 72 hours after acute hemorrhage, the well-hydrated patient passes through four distinct phases of hemodilution.[3] An estimation of the blood volume will permit recognition of these various phases and institution of appropriate treatment.

Immediately after acute loss of blood and before onset of hemodilution, deficits of red blood cell volume and plasma volume are proportionate. Although values for the hematocrit and other tests of concentration remain normal, they are entirely false. They do not reflect the obvious need for transfusions of whole blood. As the volume of plasma is increased by the entrance of fluid from the interstitial compartment, there is a partial restoration of the volume of circulating blood. The hematocrit declines progressively, as this process continues, and will indicate the presence, but not the magnitude, of anemia. Patients with partially compensated anemia require more red blood cells than plasma, and transfusions of packed red blood cells and whole blood are required to fulfill their needs. This phase occurs between 4 and 18 hours after acute hemorrhage.

The restoration of the total blood volume to normal, if no transfusions are administered, is accomplished within 24 to 48 hours by the mechanism of hemodilution. The volume of plasma actually becomes in excess of normal during the process. The hematocrit during this phase is truly indicative of the degree of hemodilution and the presence of anemia. However, blood volume studies are necessary to determine the volume of packed red blood cells which must be infused in order to restore the red blood cell volume to normal.

During the fourth phase, from 48 to 72 hours after hemorrhage, the process of hemodilution may continue, even after the total blood volume has been restored to normal. Low values of hematocrit reported during this period after acute hemorrhage exaggerate the magnitude of the existing anemia. Again, blood volume studies will be necessary to determine the volume of packed red blood cells which must be replenished and to determine the excessive volume of plasma which is present. The therapy of hypotension in the postoperative period which is caused by loss of blood must be qualitative as well as quantitative.[4]

It is interesting to note that 38.7% of the general surgical patients, 44.6% of the gynecologic patients, 80% of the orthopedic patients, 25% of the neurosurgical patients, and 25% of the genitourinary patients, who developed hypotension in the recovery room in this series, required further transfusions. It should also be pointed out, however, that circulatory overload may also constitute a real hazard in the postoperative period if therapy is too zealous. In the presence of myocardial insufficiency, coronary disease, chronic cardiac disease, or pulmonary disease, this can be particularly serious. Myocardial inefficiency, onset of hypotension, and impairment of neurological function may be precipitated by hypervolemia and increased viscosity. In the presence of hemoconcentration due to dehydration of

polycythemia, circulation to vital areas may be impaired, and intravascular coagulation and thrombosis may develop. Due to increased viscosity of the blood, marked reductions of coronary and cerebral blood flow result, which impair the efficiency of myocardial contractility and the activity of the higher centers and finally depress the vital centers of the medulla.[5] The lowest value of cerebral blood flow recorded in a living patient was observed in an individual with polycythemia.[6] We have observed hypotension after operation due to excessive administration of blood, which required performance of phlebotomy to restore efficiency of circulation.

### Hypotension of Humoral Origin

A final group of etiological factors causing postoperative hypotension are those of humoral origin. These have arbitrarily been classified under the headings of endocrine, which includes disturbances arising from the thyroid and adrenal glands, the pituitary, or the pancreas, and electrolyte, which includes dehydration and sodium, chloride, and potassium deficiencies. Some of these conditions are rare, but there is one which is being met with in increasing frequency by anesthesiologists. Reference is to the increasing use of corticotropin (ACTH), cortisone, and related steroids throughout medical practice and the complications which may follow the production of anesthesia and operation in patients who have been treated with these compounds. When cortisone is given in therapeutic dosage, it blocks the effect of endogenous corticotropin and leads to atrophy of the adrenal cortex. Eventually, changes in the structure of the pituitary gland also occur. When cortisone is withdrawn, varying degrees of adrenal cortical hypofunction may remain. How much cortisone must be given to cause adrenal atrophy is variable, as is the length of time after withdrawal before the sluggish gland regains normal function. The presence of diminished adrenal function may not be discovered until some stress is applied to the patient.

Case 4.—This patient, a 56-year-old woman, was treated for a fever of unknown etiology. Because one of the collagen diseases was suspected, she had been given corticotropin and 100 mg. of orally administered cortisone daily for several months prior to hospital admission. Extensive investigation failed to reveal the cause of her fever, but because of the development of edema the cortisone therapy was discontinued during her hospital stay. The patient's fever continued, however, and because of the development of abdominal pain an exploratory laparotomy was performed. The operative and immediate postoperative courses were uneventful, but approximately 10 hours after the operation the patient was found to be perspiring profusely, to be exhibiting a marked pallor, and to have a rapid and thready pulse and a systolic blood pressure of 70 mm. Hg. The significance of the cortisone therapy during the several months prior to operation was then appreciated, and a continuous infusion of 100 mg. of hydrocortisone (Hydrocortone) in 500 cc. of 5% dextrose and distilled water was administered intravenously. During the first three to five minutes the solution was allowed to be administered rapidly. The systolic pressure rose to 110 mm. Hg within a short period of time.

Duration of action of cortisone preparations administered orally is but six to eight hours. Onset of hypotension is therefore likely to occur at night, 8 to 10 hours after operation, when the cortisone is needed most. This fact, together with the presence of nausea and vomiting, makes it hazardous to prepare patients for operation by employing the oral route of administration. Duration of action of preparations employed intramuscularly is from 12 to 24 hours. When the preparation is deposited intramuscularly, a constant source of the essential steroid is available at all times during and after the operation. Preparations administered intravenously are effective almost immediately and, if given slowly, prove effective for 8 to 24 hours. Among patients whose need for cortisone is great, our experience has been that the level of blood pressure recordings can be controlled by varying the rate of the intravenous infusion. Adoption of a conservative attitude in the preparation of patients who have received corticotropin or cortisone for more than two weeks by administration of adequate amounts of a preparation for intramuscular use is warranted. Among older patients it has been our experience that marked hypotension may accompany or follow added stress as long as one year after discontinuation of the drug.

### Summary and Conclusions

A preliminary survey of the incidence of postoperative hypotension in a major recovery room was found to be 1 in every 31 patients. Patients who had undergone gynecologic surgery were most apt to become hypotensive during the recovery period, and patients who had been subjected to general surgical procedures were the next most likely candidates for the hypotensive group. Postoperative hypotension could be classified into six great groups according to etiological factors: hypotension of cardiovascular origin; hypotension of respiratory origin; hypotension of pharmacological origin; hypotension of neurogenic origin; hypotension of hematological origin; and hypotension of humoral origin.

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### References

1. Judson, W. E.: Hypotension: Physiologic Mechanisms and Treatment, M. Clin. North America **37**:1313-1339 (Sept.) 1953.

2. Schroeder, H. A., and Menhard, E. M.: Spontaneous Variations of Blood Pressure in Hypertensive and Normotensive Individuals, Am. Heart J. **51**:577-587 (April) 1956.

3. Barbour, C. M.: Nutritional and Hematological Factors in Geriatric Anesthesia, Ann. New York Acad. Sc. **66**:844-859 (April 2) 1957.

4. Barbour, C. M., Jr., and Tennant, R.: Clinical Application of Blood Volume Studies in Major Surgery, J. Urol. **71**:497-501 (April) 1954.

5. Sodeman, W. A.: Pathologic Physiology: Mechanisms of Disease, ed. 2, Philadelphia, W. B. Saunders Company, 1956, pp. 347-350. Wright, S.: Applied Physiology, ed. 9, New York, Oxford University Press, 1952, pp. 341-344.

6. Elliott, K. A. C.; Page, I. H.; and Quastel, J. H.: Neurochemistry: Chemical Dynamics of Brain and Nerve, Springfield, Ill., Charles C Thomas, Publisher, 1955, p. 296.

# FALSE DIAGNOSIS OF HYPERTHYROIDISM

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*An analysis is made of 228 cases in which surgery had been advised elsewhere on the basis of a misdiagnosis of hyperthyroidism. The corrected diagnosis was nervous tension and exhaustion in 112 cases; menopause, 30; physical exhaustion, 27; normal, 11; colloid goiter, 11; rheumatic endocarditis, 3; psychoneurosis, 8; hypothyroidism, 6; and miscellaneous, 20. It is believed that in the first (largest) group the most important single factor was the excessive use of coffee, tea, and tobacco; these were sometimes used in surprising amounts, sufficient to explain the nervous tension, tremor, insomnia, cardiovascular disorders, and weight loss. Determinations of basal metabolic rate gave useful information when repeated on different days with due care by experienced technicains; single determinations prove misleading. For a diagnosis of hyperthyroidism the basal metabolic rate, the protein-bound iodine test, and the radioatcive iodine test should all be significant. If the two last-named are not available, the iodine test should be done, consisting of the administration of 10 drops of strong iodine solution (Lugol's solution) three times a day for 10 days. Cautions in performing and interpreting this test are noted. Thyroidectomy is not an emergency operation, and needs to be justified by complete diagnostic information.*

Sir William Osler once said that syphilis could simulate many diseases. To a lesser degree the same may be said of hyperthyroidism. By mistake, patients with hyperthyroidism have been treated for cardiac disease, for hypertension, for nervous disorders, and for gastrointestinal dysfunctions. Conversely, many conditions not due to hyperthyroidism have been considered the result of toxic goiter and treated as such.

The number of patients who have been subjected to unwarranted thyroidectomy in the United States during the past four decades must be considerable. Many with normal thyroids were given x-ray therapy, thousands have received antithyroid drugs, and a large number are being subjected to radioactive iodine therapy.

Attention was first directed to this subject in 1937 in a paper given before the American Association for the Study of Goiter at the Detroit meeting, when a study based on an analysis of 100 patients was presented.[1] Thyroidectomy had been advised for relief of symptoms in every case, but in no instance did our examination reveal evidence of hyperthyroidism.

Just prior to this meeting, an invitation was received from Dr. Elexious T. Bell, then professor of pathology at the University of Minnesota Medical School, to present this same subject before a joint meeting of the Hennepin County and the Minnesota Pathological societies. Dr. Bell presented a study of 100 normal or slightly abnormal thyroid glands that had been removed surgically, and I presented a similar number of clinical cases in which thyroidectomy had been advised in the presence of a normal thyroid gland.

No one will deny that the diagnosis of incipient hyperthyroidism may be perplexing and that certain functional states may closely mimic toxic goiter. It was my good fortune to have trained under Drs. Charles H. Mayo, Henry S. Plummer, and John de J. Pemberton; even these eminent authorities were at times in a quandary. After a study of nearly four decades on the subject, I am chagrined from time to time at my own errors.

There is, however, one safeguard, one rule that is always safe to follow and that will prevent any such mistakes as occurred in some of a series of 228 cases about to be presented. If in doubt as to the diagnosis of toxic goiter, observe the patient. If he is hyperthyroid, this will become increasingly evident. There will be a steady weight loss accompanied by a good appetite (Graves), progressive weakness (quadriceps loss), increased pulse rate, tremor, insomnia, sweating, palpitation, and pulse pressure. The rise in the basal metabolism and the protein-bound iodine and radioactive iodine ($I^{131}$) tests should all be significant.

From the Frieda Meyers Nishan Foundation for the Study of Goiter and Thyroid Diseases of the Jackson Clinic.

There are, however, many physicians to whom one or even all of these tests are not readily available. Possibly the metabolism test alone is at their disposal. Unfortunately, a great number of metabolic machines are inaccurate, or else the patient does not cooperate satisfactorily or the technician (often the doctor) is in error. The only absolutely accurate metabolic machine that I ever saw was the Tissot used by Dr. Plummer back in the 20's. This outfit was too complicated and expensive to permit general use.

It is my belief that a patient having a normal thyroid gland can register a basal metabolic rate three or even four times normal by simply accelerating his rate of breathing. There were tests reported in the following study from nationally recognized institutions where the basal metabolic rate was +80% and even higher. It is significant that in 57 of the first 100 cases in this series the basal metabolic rate had been reported above normal by other laboratories.

### Determination of Presence of Hyperthyroidism

If the physician is unable to depend upon the accuracy and reliability of the metabolic report and does not have available the other scientific tests, what course must he follow? The teachings of two great masters on the subject of the thyroid should be recalled. Dr. Charles H. Mayo once said, "Hyperthyroidism is never an indication for an emergency operation." Too often that excellent advice is overlooked, and patients are subjected to surgery when a little more time and study would have eliminated the indication for thyroidectomy.

Dr. Plummer used to say that, if a patient is losing weight but has a good appetite, hyperthyroidism should be considered, but, if the weight remains stationary and the appetite poor, neurasthenia should not be overlooked. His demonstration of the quadriceps test as a point of differential diagnosis between these conditions is well known.

Changes in the blood pressure are characteristic of hyperthyroidism, and there would be fewer errors in diagnosis if we remembered that the systolic and diastolic pressures are both elevated in toxic nodular goiter. In exophthalmic goiter the systolic pressure is often normal or only slightly elevated while the diastolic is usually lowered. In only one other condition, aortic insufficiency, is this true. Heart palpitations, a moist warm skin, prominence of the eyes, tremor of the fingers, nervousness, insomnia, and fulness of the neck do not necessarily indicate toxic goiter. Unfortunately, too often in this series of 228 cases these had been accepted as the criteria and surgery had been advised. These symptoms, together with a sense of constriction in the neck, are characteristic of neurasthenia and nervous tension.

If there is reasonable suspicion to feel that the patient is suffering from incipient toxic diffuse goiter (Graves' disease), he may be given an iodine test with 10 drops of strong iodine solution (Lugol's solution) three times a day for 10 days. If there is a marked subjective improvement and a drop in the basal metabolic rate of 15 or 20 points, hyperthyroidism may be indicated, providing rest and withdrawal of stimulants are not factors. If, however, there is still doubt concerning the diagnosis, the iodine administration may be stopped. In a few weeks, if the patient has toxic diffuse goiter, he will lose weight and give every indication of increasing hyperthyroidism; otherwise no change will be observed.

There are some important points about the use of the iodine test to remember. This test is not applicable to patients with toxic nodular goiter. As Freeman and I pointed out in 1936,[2] iodine either has no effect or is harmful in 32% of these cases and is not effective or only slightly beneficial in 62%. At this time, the danger of the prolonged preoperative use of strong iodine solution in toxic diffuse goiter was also emphasized, in order that the patient not become iodine-fast and the value of iodine be lost at the time of surgery. The advent of the antithyroid drugs in 1941 somewhat obviated this danger, since the patient can be given an iodine rest period while taking these drugs.

If there is doubt as to the presence of hyperthyroidism in nodular goiter, there is no objection to placing the patient on therapy with an antithyroid drug. This should not be continued for months or years, both because of the possible danger of drug reaction and also because an adenoma, if present, is sufficient reason for removal of the thyroid. I am heartily in accord with Cattell and others in favoring a prophylactic thyroidectomy in cases of adenomatous goiter. If all adenomatous goiters were removed prophylactically, there would be a great reduction in the incidence of malignancy of the thyroid.

### The Present Study

An analysis of 228 cases in this study misdiagnosed as hyperthyroidism is as follows: nervous tension–exhaustion, 112; menopause, 30; physical exhaustion, 27; normal, 11; colloid goiter, 11; rheumatic endocarditis, 3; psychoneurosis, 8; hypothyroidism, 6; and miscellaneous, 20.

It is quite apparent from this analysis that the great majority of these patients fall in the first three groups. In those with nervous tension and nervous exhaustion, the most important single factor responsible was the overindulgence in the use of stimulants—coffee, tea, and nicotine. Directly or indirectly these were responsible for the nervous tension, palpitation, tremor, insomnia, and weight loss. The well-known vasoconstrictor action of nicotine was a definite factor in the cardiovascular symptoms. Many of these patients consumed from two to three packs of cigarettes a day. Many drank from 5 to 30 cups of coffee during a 24-hour period. Since an average cup of black coffee contains 2½ grains (0.15 Gm.) of caffeine, those who drank 10 cups a day received about 3 medicinal doses of the drug and those who drank 30 cups a day received about 10 therapeutic doses. As every physician knows, caffeine is a powerful stimulant, and twice during my experience patients who were reported dead by physicians were restored by the use of caffeine and artificial respiration.

In fact, the use of stimulants was so important in the conditions of these patients, and occurred so often, that the terms "nicotinitis" and "coffeitis" were coined to express this trouble. Many patients were consuming large doses of barbiturates, tranquilizers, and other drugs in an effort to combat the nervous stimulation.

The dramatic effect of withdrawing these drugs and restoring the patient to a normal regimen may well be illustrated by a few of the many cases in this series (fig. 1, 2, and 3).

### Illustrative Cases

A young woman 27 years of age had moved from a small farming community to take a secretarial position in Chicago. There, under the strain of city tension, she had more and more indulged in caffeine, nicotine,

and cola drinks to step up her nervous energy and keep going. One day she was involved in an auto accident, and her nervous symptoms became greatly aggravated. Her physician diagnosed her condition as toxic diffuse goiter resulting from the accident. Consultation was obtained with the professor of surgery

Fig. 1.—Patient complained of nervousness, palpitation, weight loss, and tremor and had an enlarged thyroid. Thyroidectomy had been advised for toxic goiter. Diagnosis: colloid goiter and nervous tension.

of a medical school, and thyroidectomy was decided upon. As a result of the auto accident, a lawsuit developed, and, before operation could be performed, the attorney for the automobile insurance company requested that I examine the patient. It was apparent from both the clinical history and the physical examination that the patient did not have toxic diffuse goiter. These findings were substantiated by a basal metabolic reading of +4%. Incidentally, the patient was found to be the victim of unsuspected syphilis contracted from a divorced husband. She was taken off of all stimulants, given antisyphilitic treatment, and sent back to the farm to rest. Within five weeks she had gained 26 lb. (11.8 kg.) and was well on the way to normal health.

This girl did have a somewhat deceptive appearance. She had lost weight (but had a poor appetite), she was extremely nervous and agitated, she had prominent eyes, her skin was warm and moist, she had a tremor, her pulse rate was 84, she complained of palpitation, and her neck was symmetrically enlarged by a colloid goiter.

This case was used to illustrate a point in my book, "The Answer Is . . . Your Nerves." Some years after the above incident occurred, a young commander in the Navy, a victim of overindulgence in stimulants, consulted me. As he was reading this book, he came across the story of the young woman above and recognized her as the girl he had married during the war. Today they are together, both happy and well.

The following case illustrates the errors that may arise from an incorrect basal metabolic reading. A middle-aged woman was brought from Minnesota to have a thyroidectomy performed for a toxic goiter. All arrangements were made in advance for the operation, and I was assured there was no question regarding the diagnosis. The basal metabolic rate was reported as +44%. It was not easy to explain to those who accompanied the patient that her thyroid was normal and that no surgery was required, only rest. Hers was a case of physical exhaustion resulting from strenuous duties as a housekeeper. Our clinical diagnosis was confirmed by a basal metabolic rate of +4%.

Perhaps the most surprised and at first disappointed patient came from New York City. There he had been told that he had an exophthalmic goiter. He came definitely anticipating a thyroidectomy and was amazed to learn not only that he did not require surgery but that his restoration of health could be brought about by the simple expedient of giving up stimulants and changing a life in the city for one in the pine woods for a few months.

Fig. 2.—Pseudoexophthalmos, basal metabolic rate of +32%, nervousness, palpitation, heat intolerance, and weight and strength loss confused diagnosis and led to advice of surgery.

There is one case that I shall always remember, that of a young mother of three children; she was extremely run down and weighed but 85 lb. (39 kg.). She had undergone a steady weight loss of 36 lb. (16.3 kg.) but at no time had her appetite been excessive or even good. She did present many of the

symptoms of pseudohyperthyroidism and had expected to undergo surgery within a few days. Fortunately she was spared this ordeal, which in her exhausted state might have resulted disastrously, even though it entailed only the partial removal of a normal thyroid gland. Within two months after the stopping of stimulants and getting her rest, this young mother was back to normal weight and health.

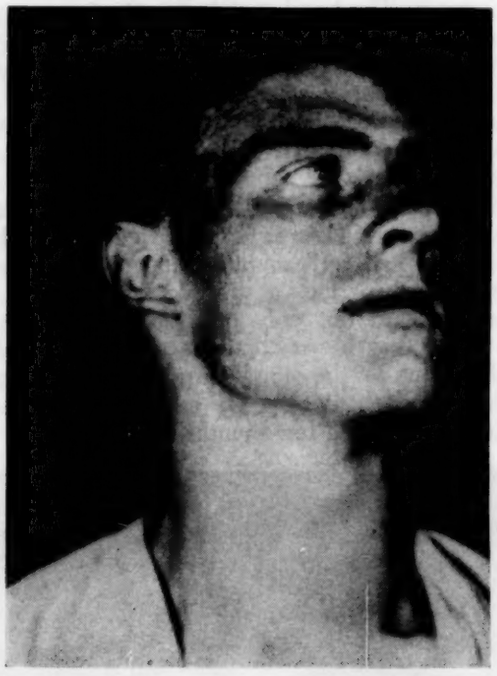

Fig. 3.—Symmetrical enlargement of neck, nervousness, tachycardia, large eyes, and falsely elevated basal metabolic rate led to erroneous diagnosis of hyperthyroidism.

Not all such cases are so easily determined, as illustrated by the following report: A 26-year-old man came to the clinic stating that he had been told at a large medical institution that he required an operation for toxic goiter. At this institution he had two metabolic rates taken, the reports being +69 and +70%. From his history and from the physical examination, I judged his thyroid to be normal but decided to be absolutely sure and have a basal metabolic test done. Much to my surprise and chagrin, this test came back +59%. (Dr. Plummer used to require us to estimate the basal metabolic rate within 10 points.) The patient was admitted to the hospital, and the next day the result had dropped to +28%; a week later it was +13%, and the patient was discharged with a diagnosis of nervous and physical exhaustion.

The two technicians performing metabolism tests in our clinic have a combined service record of over 50 years, and our metabolic machines are constantly being checked for accuracy. Yet, even under such conditions, a nervous, rapidly breathing patient can give an inaccurate reading until repeatedly checked.

## Comment

Although a constant check of this series of 228 cases is being made, approximately one-fourth have been lost to follow-up. It would be a mistake to assume that all or even a considerable number are now living and well. A few have died, including one who was found to have a carcinoma of the rectosigmoid rather than toxic goiter when he was admitted. No one has yet found a cure for neurocirculatory asthenia. Psychiatry has undoubtedly helped some. Those women who have passed the menopause state are now undoubtedly more serene and relaxed in their later years. The six patients with hypothyroidism are maintaining a normal status with desiccated thyroid, 2 grains (0.12 Gm.) daily.

One patient, a 35-year-old man, had the misfortune to be rushed into surgery while on a business visit to a California city. There, while under considerable pressure for a few weeks, he returned to the excessive use of stimulants, became extremely agitated, and lost weight. Before he realized it, he was rushed to a hospital, and a considerable amount of normal thyroid gland was removed. When the patient returned to see me, he was in a frank state of myxedema with a basal metabolic rate of –30%.

Finally, if in doubt as to the diagnosis of hyperthyroidism, do not advocate emergency surgery, use of $I^{131}$, or any other type of therapy. First establish the diagnosis beyond any doubt. Once the diagnosis is definitely determined, do not procrastinate but see that the patient receives the proper treatment.

## Summary

Surgery was advised in 228 patients whose conditions were misdiagnosed as hyperthyroidism. Nervous tension was present in 112 of these patients, 27 were ill from physical exhaustion, 30 had menopause symptoms, and the rest suffered from miscellaneous conditions. The most important factor in the status of these patients was the excessive use of stimulants—coffee, tea, and nicotine. Due to the use of these stimulants, many of these patients presented a picture of pseudohyperthyroidism. This picture was one of weight and strength loss, nervousness, insomnia, palpitation, tremor, and sweating. The basal metabolic rate in a high percentage of cases had misled the examining physician. It is important to be sure that the diagnosis is accurate despite the basal metabolic readings, especially when protein-bound iodine and radioactive iodine ($I^{131}$) tests are not available. Thyroidectomy should never be looked upon as an emergency operation. A simple and effective iodine test should be tried in possible cases of toxic diffuse goiter (Graves' disease).

30 S. Henry St. (3).

### References

1. Jackson, A. S.: Needless Thyroid Surgery: Analysis of 100 Cases, West. J. Surg. **45**:448-452 (Aug.) 1937.

2. Jackson, A. S., and Freeman, H. H.: Effect of Iodine in Adenomatous Goiter, with Especial Reference to Toxic Adenomas, J. A. M. A. **106**:1261-1263 (April 11) 1936.

# BLOOD STUDIES AS AN AID IN DIFFERENTIAL DIAGNOSIS OF ABDOMINAL TRAUMA

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*The preoperative differential diagnosis of injuries to the abdominal viscera depends on detailed correlation of physical and laboratory findings at the time of admission with the findings of the surgeon at laparotomy. Analysis of 338 such cases showed that the most distinct effect was the leukocytosis that followed rupture of the liver or spleen by blunt trauma. The average of 23,890 white blood cells per cubic millimeter seen in liver injuries and 19,050 in blunt trauma to the spleen was higher than that caused by gunshot or stab wounds to these viscera and also higher than that following trauma of any sort to other abdominal viscera. The data on systolic blood pressure and hemoglobin concentration, though valuable in evaluating the condition of the patient, did not lead to comparable generalizations. A total leukocyte count of 15,000 or more per cubic millimeter justifies the suspicion of ruptured liver or spleen if other findings are compatible with that diagnosis.*

Abdominal contusions may cause serious internal injuries without early reliable symptoms or signs. But the attending physician must decide whether immediate surgery is necessary as a lifesaving measure or whether expectant treatment may be pursued. Moreover, he is aware of the dangers of an unnecessary exploratory operation in a patient who has associated injuries of the thorax, head, or other parts of the body as ordinarily encountered in automobile accidents. Therefore, any procedure which will help establish a more accurate early diagnosis is valuable.

Our study was made on 338 consecutive surgical patients admitted to the Indianapolis General Hospital during the past 13 years and includes those previously reported on by one of us and Lee.[1] The youngest patient was 8 and the oldest 70 years old; the average age was 31 years. Eighty-five per cent of the patients were males and 15% were females. The patients were divided into four groups—those with (1) contusions of the liver, spleen, kidneys, and intestines; (2) gunshot wounds of the liver, spleen, kidneys, and intestines; (3) stab wounds of the liver, spleen, kidneys, and intestines; and (4) injuries of other viscera with or without penetrating or perforating wounds.

## Diagnostic Procedures

A carefully taken history often gave helpful clues as to the type of injury and the organs involved. The physical examination was methodical and has been outlined in detail previously.[2] X-ray examinations were not routine, but leukocyte counts and hemoglobin determinations were made immediately upon admission, were repeated once for accuracy, and then repeated at 15 to 30 minute intervals until a decision was made concerning the need for surgery. When leukocyte counts exceeded 15,000 per cubic millimeter and the clinical symptoms and signs were corroborative, surgery was performed. In some cases the clinical findings warranted exploration although leukocytosis was not portentous. In every case, free blood was found in the peritoneal cavity or retroperitoneal space or both at operation, although the amount as estimated by the surgeon did not always coincide with the amount indicated by the fall in hemoglobin level or by the degree of shock.

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The surgeon's estimate of blood loss was probably inaccurate in most instances because the volume of blood lost was not measured and there were no blood volume determinations. Moreover, the amount of blood given by transfusion was generally less than the quantity believed to have been lost. This is important, since some bleeding inevitably occurs as a direct result of the operation. Hemoglobin level determinations were also at variance with predicted values before and after operation. This may be explained by the fact that many patients were operated upon before hemodilution could occur, although the time for this phenomenon is variable. However, the higher hemoglobin level values should have been reduced by the use of intravenous fluids, which was invariably started before surgery, and certainly should have fallen after surgery if transfusions were inadequate. This fall did not occur in most instances.

Shock, as described by the attending resident, did not always coincide with his appraisal of blood loss nor with the expected changes in pulse, temperature, respiration, color of the skin and mucous

membranes, venous engorgement, or systolic and diastolic blood pressures. Therefore, in evaluating the degree of shock or excitement, we have relied upon the recorded clinical impressions as well as the tangible evidences as manifested chiefly by the blood pressure. Our charts depict the systolic blood pressure and not the clinical impressions and other variables which might be termed intangible appraisals or notions. But the observer's opinions were reviewed and considered in our summaries.

Internal injuries without external wounds are often difficult to detect. However, it is in this group that leukocyte counts are of greatest value. This is particularly evident in lacerations of the liver or spleen. Our observations indicate that the number of leukocytes increases with the degree of contusion to the solid viscus. For example, a simple stab wound of the liver produces very little or no increase in the number of leukocytes, whereas a liver fracture due to blunt force is accompanied by a great elevation. Gunshot wounds of the liver and spleen usually result in some increase in the number of leukocytes, although not as much as from nonpenetrating or perforating injuries.

The salient features of our studies are depicted in the accompanying diagrams. Blood cell counts are averages of two or more determinations, depending upon the length of time elapsing prior to surgery. Figure 1 shows data from 21 consecutive surgical cases of traumatic rupture of liver without external wound. The total leukocyte count in each case is above 10,000 per cubic millimeter. Twenty of the 21 patients, or 95%, had counts of 15,000 or more; 16, or 76%, had 20,000 or more; and 5, or 24%, had over 30,000. The increase in the number of leukocytes was usually proportionate to the decrease in hemoglobin level. Of the 16 patients with leukocyte counts of 20,000 or more per cubic millimeter, 9 (56%) showed hemoglobin values of 11 Gm. or less per 100 cc. Only two patients had less than 10 Gm. per 100 cc.; one of these had a leukocyte count of 15,000 and the other 34,000 per cubic millimeter. Nineteen, or 90%, showed hemoglobin levels of 10 Gm. or more per 100 cc., and 9, or 43%, had over 12 Gm. per 100 cc. One patient had multiple injuries, including those of liver, spleen, and pancreas, with an avulsion of the spleen. This and other cases of avulsion have been mentioned elsewhere.[3] The highest leukocyte count (42,000 per cubic millimeter) was in a patient who had a severe contusion of the right upper part of the abdomen. He was operated upon promptly and was found to have a severely lacerated liver. The leukocyte count was done on admission, within one hour after the injury, and was repeated in 15 minutes.

The degree of shock, as estimated from the systolic and diastolic blood pressure and the clinical impression of the examiner, showed some correlation with the leukocyte count but almost none with the hemoglobin values. This is understandable, since many of these patients had multiple superficial contusions and bruises in addition to ruptured livers, and they probably had some degree of hemoconcentration. Eighteen, or 86%, were described as having slight to moderate degrees of shock with group (cases 2 and 14) exhibited what was termed excitement—their blood pressures were over 150 mm. Hg, the leukocyte counts were 15,000 and blood pressures of 100 mm. Hg or more. Eleven of these 18 patients, or 61%, had leukocyte counts of 20,000 or more per cubic millimeter. Two of this 20,000 per cubic millimeter, and the hemoglobin values were 9 and 10 Gm. per 100 cc. respectively. Two patients (cases 10 and 21) were described as being in severe shock, with systolic pressures of 98 mm. Hg. Their leukocyte counts were 18,000 and 15,000 per cubic millimeter, and the hemoglobin values were above 11 Gm. per 100 cc. One patient (case 12) was in profound shock, with a systolic

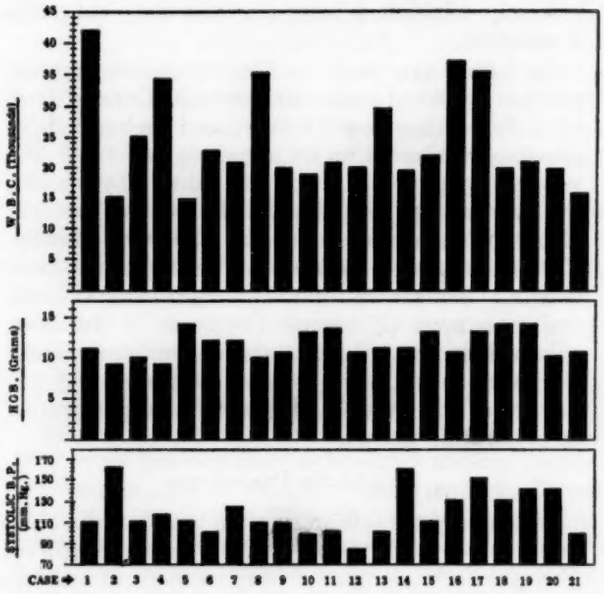


Fig. 1.—Data on 21 consecutive surgical cases of traumatic rupture of liver without external wound.

pressure of 80 mm. Hg; the hemoglobin value was 11 Gm. per 100 cc., and the leukocytes numbered 21,000.

Figure 2 shows data from 38 consecutive surgical cases of traumatic rupture of the spleen, without external wound. Thirty of the 38 patients, or 79%, had leukocyte counts above 15,000 per cubic millimeter; 15, or 42%, above 20,000; and 6, or 15%, above 25,000. One of these patients (case 24) had associated liver injuries. The fall in hemoglobin level and the rise in the number of leukocytes are roughly proportionate.

Of the 15 patients with a leukocyte count of 20,000 or more per cubic millimeter, 6 (40%) had hemoglobin values of less than 10 Gm. per 100 cc. One patient (case 26) had only 5 Gm. per 100 cc., and the leukocyte count was 18,000 per cubic millimeter.

The degree of shock as estimated by the systolic and diastolic blood pressure and by the clinical impression of the surgeon showed no definite correlation with the leukocyte count and almost none with the hemoglobin level. Twenty-one patients had blood pressures of 100 mm. Hg or more; 8 of these showed moderate degrees of shock. Three patients (cases 3, 5, and 37) showed some excitement, but the leukocyte count was not significantly raised or lowered. Seventeen patients (44%) had systolic

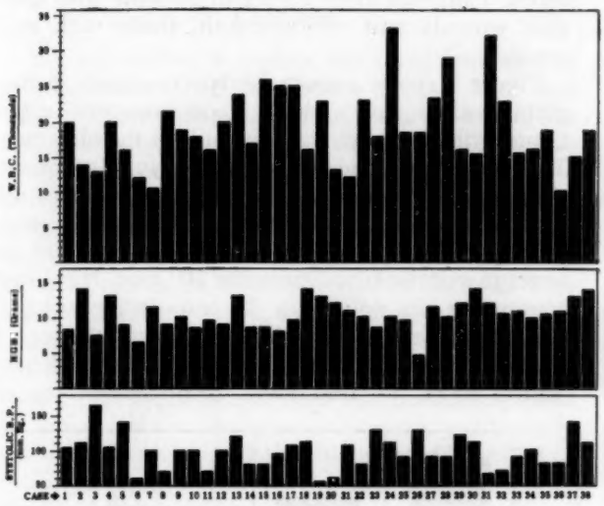

Fig. 2.—Data on 38 consecutive surgical cases of traumatic rupture of spleen without external wound (with associated liver injuries in case 24).

blood pressures below 100 mm. Hg. Shock was described as severe in 10 patients and extreme or profound in 7. There was no significant correlation in leukocyte counts, although four of the latter had counts above 20,000 per cubic millimeter. The hemoglobin values were not commensurately decreased.

Figure 3 shows data from eight consecutive surgical cases of intestinal lacerations without external wound. In only two of these patients 25% was the leukocyte count above 10,000 per cubic millimeter. In the remainder, the counts were within normal limits. The fall in hemoglobin level is less than in patients with lacerations of the liver or spleen. The systolic blood pressure was not below 100 mm. Hg in any case, although the surgeon described the patients in cases 1 and 2 as in moderate shock. None of the patients were described as excited, but four were said to be apprehensive. On the right side of the diagram are listed data from 16 consecutive surgical cases of traumatic rupture of the kidney. Leukocyte counts are variable; however, five (31%) of the patients had a leukocyte count of 15,000 or more per cubic millimeter. Hemoglobin values were within normal limits except in the patients in cases 10 and 12. In these, the hemoglobin levels were 8.5 and 7 Gm. per 100 cc., and the leukocyte counts were 13,500 and 16,000 respectively.

Shock was severe in the patients in cases 11, 14, and 15; the blood pressures were below 90 mm. Hg; and each of these patients had a leukocyte count above 15,000 per cubic millimeter, although hemoglobin values were above 10 Gm. per 100 cc.

In figure 4 are shown data on leukocyte counts, hemoglobin levels, and systolic blood pressures in patients with traumatic lacerations of the liver, spleen, intestine, and other organs as compared with similar data on patients with gunshot wounds and stab wounds. There were 21 consecutive surgical cases of ruptured liver; 29 consecutive surgical cases of gunshot wounds, and 47 consecutive surgical cases of stab wounds of the liver. Note that patients with hepatic lacerations had the highest leukocyte counts, with an average of about 24,000 per cubic millimeter; patients with gunshot wounds of the liver had an average leukocyte count of 16,000 per cubic millimeter; whereas patients with stab wounds had an average leukocyte count of 12,000 per cubic millimeter. The hemoglobin level in grams per 100 cc. is inversely proportional to the leukocyte count. Systolic blood pressures were lowest and shock most severe in patients with gunshot wounds, less in patients with traumatic rupture, and least in those with stab wounds. On the basis of hemoglobin determinations, shock should be more evident in patients with traumatic rupture. However, neurogenic or primary shock was more prevalent in patients with gunshot wounds where apprehension and fear played a prominent role. Excite-

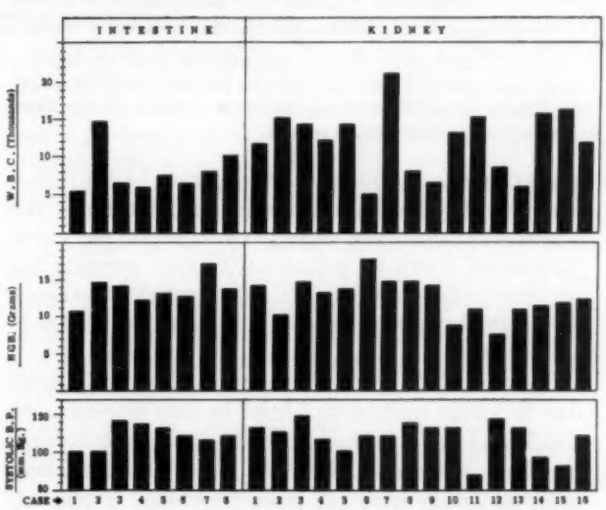


Fig. 3.—Data on 8 consecutive surgical cases of intestinal lacerations without external wound and 16 consecutive surgical cases of nonpenetrating lacerations of kidney.

ment was noted more often in patients with stab wounds, and shock was less frequently described.

Thirty-eight consecutive surgical cases of traumatic rupture of spleen are compared with five consecutive surgical gunshot wounds and one stab wound of the spleen. Leukocytosis was highest in patients with traumatic rupture, less in those with gunshot wounds, and least in those with stab wounds. It is regrettable that, for our single case of

stab wound, there is no hemoglobin value on the chart; however, the pattern is similar to that in hepatic injuries in which the hemoglobin value varies with the leukocyte count. The degree of shock was also similar to that in hepatic injuries, although in the one patient with splenic stab wound the blood pressure was only 80 mm. Hg.

Ninety-eight consecutive surgical cases of intestinal injuries were studied. Eight patients had contused lacerations and normal leukocyte and hemo-

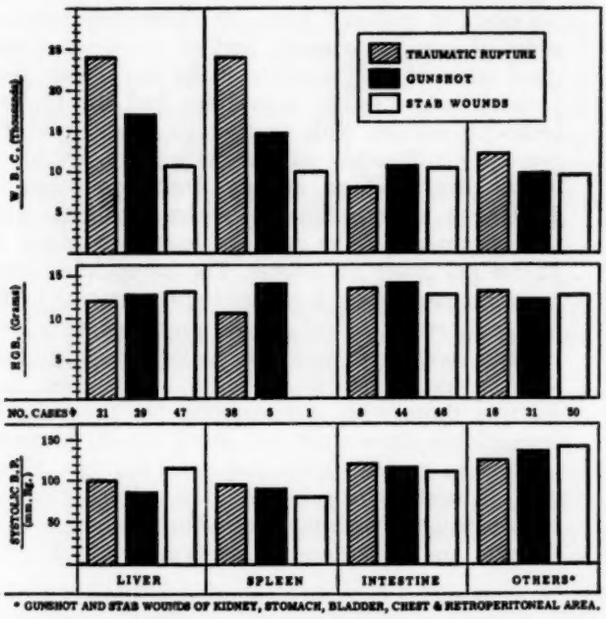


Fig. 4.—Leukocyte counts, hemoglobin level determinations, and systolic blood pressures in patients with traumatic lacerations, gunshot wounds, and stab wounds of the liver, spleen, intestine, and other organs.

globin levels. In the 44 patients who had gunshot wounds, the findings were similar, although the leukocytes numbered slightly over 10,000 per cubic millimeter. Forty-six patients with stab wounds had no leukocytosis and slightly low hemoglobin values. These findings were contrary to those in injuries to solid viscera.

Systolic blood pressures were highest in injuries due to blunt trauma and least in stab wounds, but shock was not a prominent feature, and the average pressure was above 100 mm. Hg. Fear, apprehension, and pain were far more prevalent in patients with gunshot wounds, but apparently neurogenic or primary shock was not present in a significant number. Excitement was often described in patients with stab wounds.

The column marked "others" includes data from 97 consecutive surgical cases of injuries to the stomach, bladder, kidney, chest, retroperitoneal area, and abdominal wall. Leukocyte counts are highest in patients with injuries due to blunt trauma, less in patients with gunshot wounds, and least in patients with stab wounds. The hemoglobin level is not inversely proportional to the leukocyte count as in hepatic and splenic injuries.

Systolic blood pressures were lowest in patients with injuries due to blunt trauma and highest in those with stab wounds. It is important to note that contused wounds in this group were extensive, and, therefore, hemoconcentration would be more likely to occur. Perhaps for this reason these patients were more often described as being in various degrees of shock. Pain was more severe in patients with gunshot wounds and excitement in those with stab wounds.

Figure 5 shows average leukocyte counts, hemoglobin values, and systolic blood pressures in patients with nonpenetrating wounds of the abdomen. The average number of leukocytes in 21 consecutive surgical patients with contused wounds of the liver was 23,890 per cubic millimeter. The average hemoglobin level was 11.77 Gm. per 100 cc. and the average systolic blood pressure 100 mm. Hg. Blunt trauma to the spleen in 38 consecutive surgical cases produced an average leukocyte count of 19,050 per cubic millimeter, a greater fall in hemoglobin level, to 10.6 Gm., accompanied by an

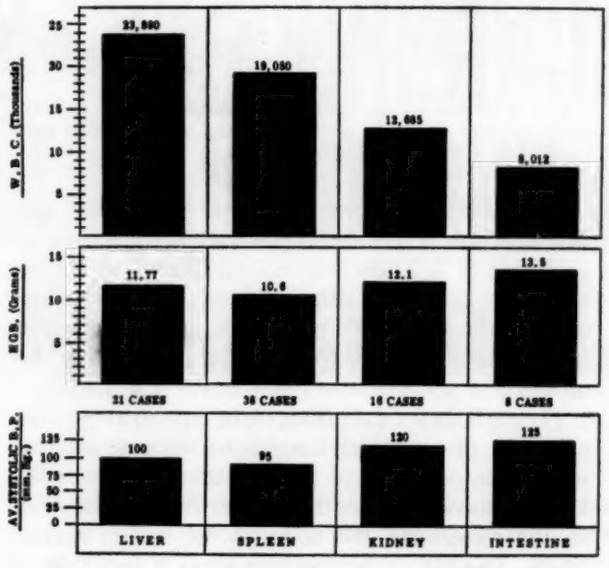


Fig. 5.—Average leukocyte counts, hemoglobin level determinations, and systolic blood pressures in blunt trauma to the liver, spleen, kidney, and intestine.

average systolic blood pressure of 95 mm. Hg. Sixteen consecutive surgical cases of ruptured kidney showed an average leukocyte count of 12,685 per cubic millimeter with a hemoglobin level of 12.1 Gm. per 100 cc. and systolic blood pressure of 120 mm. Hg. Contusions to the intestine with perforation in eight consecutive surgical cases produced an average leukocyte count of 8,012 with a hemoglobin level of 13.5 Gm. and systolic blood pressure of 125 mm. Hg.

### Leukocyte Counts in Ruptured Ectopic Pregnancy

We thought that some information concerning the stimulus for leukocytosis might be obtained by studying ruptured ectopic pregnancy with free blood in the peritoneal cavity. Eighty-one consecutive surgical cases were reviewed. Leukocyte counts varied from 4,000 to 25,000 per cubic millimeter. In 27 cases, or one-third, counts were 15,000 or more; only 5 (6%) were above 20,000. The average count was 12,600.

### Comment

We are unable to explain the rapid leukocytosis which results from lacerations of the liver and spleen. The number of leukocytes is generally, but not invariably, greater when hemorrhage is severe enough to cause an early depletion of hemoglobin, although this would imply hemodilution, and leukocytes should decrease in number. Free blood in the peritoneal cavity may augment leukocytosis, but in many of our cases of stab wounds associated with massive bleeding there was relatively little elevation in the number of leukocytes. Perhaps this is the result of a total loss in circulating cellular elements, but hypovolemia need not be accompanied by leukopenia or by hemoglobinemia, particularly when the loss of circulating blood volume is due to plasmapheresis. Free blood in the peritoneal cavity resulting from ruptured ectopic pregnancy is accompanied by a moderate increase in leukocytes, as shown by our studies in 81 consecutive surgical cases. The surgeon in these cases had described the amount of blood in the peritoneal cavity as "large," "massive," or "over 1,500 cc."

When leukocyte counts were checked for accuracy or repeated in 15 to 30 minutes in those patients in whom surgery had been delayed, a rapid fall in the number of leukocytes occurred after one hour. This was noted in 5 cases of hepatic and 11 cases of splenic rupture but is not shown on our charts because the counts shown represent averages as previously defined. This observation may be partially explained by the shift of intercellular fluid which is in progress and also, in many cases, by the administration of intravenous fluids. The rapid fall in the number of leukocytes is less in patients with large areas of contusion on the body surface and in those with associated injuries, in whom the hemoglobin level averaged 13.2 Gm. per 100 cc. (fig. 4, last column). Hemoconcentration probably resulted from plasmapheresis.

The inciting mechanism for the prompt leukocytic response in blunt trauma must include factors other than free blood in the peritoneal cavity or changes in blood volume. Shock may be a factor, but this is primarily a clinical syndrome with many pathological causes. The word is, therefore, ordinarily used rather loosely to connote various reactions to trauma. Its symptoms and signs are due in great measure to the failure of compensatory mechanisms to adjust to an abrupt disproportion between the circulating blood volume and the size of the vascular tree.[4] The degree of this disproportion will vary with different individuals, depending upon the lability of their blood vessels and the amount of blood held in blood reservoirs, especially the liver and spleen. This is true whether the shock is due to neurogenic (primary or transient shock), hematogenic (secondary or persistent shock), cardiogenic, or vasogenic factors. Our interpretation of the degree of shock was based upon the systolic and diastolic blood pressure and the clinical impression of the examiner. It is important to note that shock was generally more severe in injuries due to blunt trauma, and leukocytosis was much higher even though hemoglobin values were decreased (fig. 5).

Leukocytosis in shock is a complex problem and has been previously reviewed by one of us.[5] Leukocyte counts and hemoglobin values are higher in hematogenic shock due to extensive trauma and generalized contusions because, as in the case of extensive burns, there is hemoconcentration resulting from plasmapheresis.[6] However, after severe hemorrhage the reverse is true, probably because of hemodilution and peripheral vasoconstriction. In cardiogenic or late hematogenic shock, higher counts are observed because of venous stasis and peripheral vascular failure.

Bacterial antigens, which may be released by lacerations of organs known to contain large numbers of reticuloendothelial cells, may play a role in causing the leukocytosis which results from hepatic and splenic injuries. We are presently making blood cultures in all cases of abdominal trauma which are serious enough to warrant surgery. Results of these studies will be published later.

### Summary

Leukocyte counts aid in establishing the diagnosis of nonpenetrating traumatic injuries to the liver and spleen. When corroborative symptoms and signs are present, a leukocyte count of 15,000 per cubic millimeter or more denotes a ruptured liver or spleen or both.

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### References

1. Berman, J. K., and Lee, W. V.: Traumatic Injuries to Liver and Spleen: Leucocyte Counts as Aid in Diagnosis, J. Indiana M. A. **43**:1001-1004 (Oct.) 1950.

2. Berman, J. K.: Principles and Practice of Surgery, St. Louis, C. V. Mosby Company, 1950, pp. 861-869.

3. Berman, J. K.: Traumatic Avulsions of Lung and Other Organs Without External Wound, Quart. Bull. Indiana Univ. M. Center **17**:74-75 (Oct.) 1955.

4. Berman,[2] pp. 355-359.

5. Berman,[2] pp. 376-379.

6. Berman, J. K.; Peterson, L.; and Butler, J.: Treatment of Burn Shock with Continuous Hypodermoclysis of Physiological Saline Solution into Burned Area: Experimental Study, Surg. Gynec. & Obst. **78**:337-345 (April) 1944.

# MILK ALLERGY—DIAGNOSTIC ASPECTS AND THE ROLE OF MILK SUBSTITUTES

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*The frequency of allergy to cow's milk cannot be determined from existing publications because estimates in the past have often been based on symptoms that might have other explanations. Among the author's own patients, 5% report having had clinical symptoms referable to cow's milk, but less than 0.3% of his patients proved to be allergic to it. A food can cause gastrointestinal upsets and many other symptoms by virtue of nonantigenic components, special toxins, physical properties, poor preparation, or bacterial contamination. Real allergy to raw cow's milk can be overcome in many cases by boiling to denature the offending protein (usually the lactalbumin) or using evaporated milk. It may be necessary to avoid bovine products entirely and use goat's milk, or a meat base formula, or predigested casein with certain additives. It may even be necessary to exclude all animal protein by resorting to vegetable base milks like those made from soy beans. The prolonged use of these substitutes cannot be recommended with confidence. Since infants have been known to lose their sensitivity to cow's milk it should be retried at reasonably frequent intervals.*

Much has been accomplished in creating an awareness of the symptomatology of allergy to milk, and much has been contributed to our understanding of nutrition by the recent studies of milk substitutes. It would now seem time for a considered evaluation of milk allergy and milk substitutes as they relate to each other.

What is milk allergy? Or—perhaps more important—what is not milk allergy? One frequently loses sight of the fact that milk allergy, simply stated, is a specific immunological, antigen-antibody response to milk. Milk allergy is not a nonspecific disturbance produced by milk. For the past few years, there has been a disturbing trend toward suspecting allergic symptoms, and all gastrointestinal symptoms, in infants, of being allergic manifestations to milk. While it is obvious, for example, that allergy to milk can be a cause of gastrointestinal symptoms, it is only one of many possible causes. Cessation of symptoms with the withdrawal of milk is a fallacious way to diagnose allergy. All that one proves is that milk is the incitant, but not that the reaction is allergic.

Criteria for specific diagnosis imply that there are unmistakable clinical expressions following ingestion of milk which are generally accepted as allergic in etiology. Such reactions would be (1) wheezing and allergic rhinitis; (2) urticaria, angioneurotic edema, and atopic dermatitis; (3) the rare phenomenon of anaphylactic shock; and (4) gastrointestinal symptoms when accompanied by one of the aforementioned.

Such clear-cut evidences are not too frequent, and one must seek confirmation by (1) positive cutaneous tests; (2) personal or family history of allergy among the immediate collaterals; (3) possible roentgenographic confirmation in gastrointestinal symptomatology, where comparative studies done with barium-milk feedings versus barium controls reveal a hypotonic stomach, pylorospasm, and/or segmentation of the small intestine[1]; and (4) eosinophilia of nasal secretions or of blood.

Although admittedly it is often difficult in clinical practice to insist on such criteria, there should be a greater awareness of their significance. Certainly, from the standpoint of medical documentation and statistical evaluation, these criteria are essential.

In the light of such stipulated criteria for allergy to milk, its incidence is yet to be determined. Estimates culled from the literature report variations of from 0.3 to 55%. These estimates are based on symptoms ranging from allegedly allergic flatus or diaper rash[2] through the gamut to obviously allergic anaphylactic shock. Also, these estimates are not derived from comparable groups of cases. An allergist will encounter more cases of milk allergy than will a general practitioner; and, since milk allergy is more frequent in infancy than in later life, a pediatrician will note cases of milk allergy more often than will the internist.

Although it is common knowledge that a positive cutaneous test is not in itself indicative of clinical allergic reactivity,[3] a number of studies are based on just that criterion alone. Even those who would depend on the cutaneous test for diagnosis do not utilize uniform methods; extracts are not of uniform testing strength, and scratch tests are equated with the more sensitive intracutaneous tests.

A survey in my practice reveals an incidence of about 5% of allergic patients who report having had clinical symptoms referable to milk. Actual incidence of milk allergy under my own observation would be less than 0.3%.

Read in the Session on Allergy before the Section on Miscellaneous Topics at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

### Symptoms

Many symptoms are attributable to milk hypersensitiveness, as all of the tissues of the body are potential reactors. Alimentary disturbances are the most common: nausea, vomiting, abdominal pain, and diarrhea—to mention a few. Even clinical syndromes such as pylorospasm, celiac disease, ulcerative colitis, and Schoenlein-Henoch purpura have been described.[4]

Urticaria, angioneurotic edema, and atopic dermatitis have appeared in the skin as a consequent of milk ingestion. Rhinorrhea, clogging of the nose, and chest symptoms such as coughing, wheezing, and dyspnea are also possible.

### Intolerances

It is important to point out that there are many "intolerances," "disagreements," or "idiosyncracies" which are nonspecific responses due to properties inherent in foods themselves. These may manifest themselves in any person whose constitutional make-up renders him susceptible to these properties, are not antigen-antibody reactions, and do not fulfill the criteria for allergy. There are numerous examples of such properties:

1. Pharmacological qualities of food, such as those producing the laxative effect of prunes (possibly due to the normally contained diphenylisatin) can affect individuals.
2. Bacterial contamination, particularly in milk, is capable of causing severe gastrointestinal upsets.
3. The hygroscopic or fibrous physical content of foods is capable of inducing gastrointestinal responses in some persons.
4. Toxic factors in many foods, although small in amount, affect an occasional individual who is predisposed to react. Obvious examples are the toxic principle in the fava bean, which can cause severe systemic reactions, the ricin in the castor bean, or the soyin in the soy bean.
5. Lastly, the physiological response by infants to an improperly compounded formula of milk can also result in vomiting, colic, and the like. Even rapid, forced, or excessive feeding can cause a similar response.

### Milks

For the young of man, breast milk is the natural and admittedly ideal food. It is rarely allergenic, although there are a few reported instances of reactivity to the substances ingested by the mother that are contained in breast milk.[5]

Antigenically, cow's milk is a complex substance, and sensitization may be acquired to any of its several protein components. The broad classification of milk proteins into three major fractions—lactalbumin, casein, and lactoglobulin—on the basis of solubility suffices for practical discussion here.

Clinical and cutaneous sensitivity occurs most frequently to lactalbumin.[6] Boiling milk, or heating it incident to evaporation, alters or denatures this protein, rendering it relatively nonantigenic. Consequently, evaporated milk is an effective substitute for raw cow's milk. Since lactalbumin is a species-specific protein, substitution of other mammalian milks, such as goat's milk, for cow's milk is also practicable. Conversely, casein is a heat-stable protein, common to all animal milks. Sensitivity to this component implies sensitivity to all mammalian milks and suggests substitution of meat base milk, vegetable milks (such as the soy bean preparations), or hydrolyzed casein mixtures.

Meat base formula consists of strained meat with suitable additives and approximates cow's milk in complete proteins, fats, carbohydrates, and minerals. Because there are proteins common to both milk and beef serum,[7] parallel allergic reactions to cow's milk and beef are possible; but they are by no means frequent.[6] In addition, the heat processing of meat prepared for meat base formulas probably despeciates the proteins which are immunologically identical in both beef serum and milk.[7]

Nutrition can be provided for the unusual infant who cannot tolerate protein from either mammalian or soy bean sources with a predigested, hydrolyzed casein with additives, commercially prepared. The extremely rare phenomenon of anaphylactic shock reaction to even a few drops of milk necessitates complete avoidance of all mammalian milks. Fortunately, vegetable base milks are available for use in such instances.

### Soy Bean Preparations

A variety of soy bean preparations have been devised, the advantages of which have been well documented. Generally, these preparations contain vegetable proteins, high in amino acids, supplemented by vegetable oils, multiple carbohydrates, and calcium and sodium salts to equal cow's milk. In some preparations, vitamins are also added. One can only be impressed with their artificially contrived nutritional potential.

The advantages of soy bean milk are apparent. The disadvantages are less obvious. Were these milks used only in cases of proved milk sensitivity, any disadvantages would be outweighed by the urgency of providing nutrition. However, with the widespread and prolonged—and perhaps even promiscuous—use of these synthetic milks, it becomes important to be more critical.

Sensitivity to the soy bean would appear to be rare, according to the literature,[8] despite the fact that the legumes contain potent antigens.[6] However, the soy bean may induce sensitization not only to itself but to other legumes. In my own experience, I have seen, with increasing frequency, children with clinical sensitivity to soy bean with correlating positive cutaneous tests. In several instances, cross sensitization to other legumes had occurred, even though these legumes had never been ingested. This was evidenced by positive cutaneous tests to legumes (some of higher reaginic titer than those to soy bean) and by clinical reactivity. This cross sensitivity seems to occur more often than that of milk with beef. With the increasing use of soy bean

milks, and with frequent, prolonged, or continuous exposure, I expect many more such observations will be added to the literature.

Vitamin A deficiency has been reported in allergic infants sustained on synthetic milks without animal fats and without supplementation of the diet with vitamin A.[9] The symptomatology was reversible with administration of large doses of this vitamin. However, instances of keratomalacia with permanent blindness have been reported.[10] These observations are significant, because clinical vitamin A deficiency is not seen in the average infant, who obtains enough of this vitamin, normally contained in mammalian milk, without supplementation.

Vitamin A would seem to be better absorbed when naturally dispersed in milk than when artificially supplemented in oil preparations.[11] Incidentally, absorption may be impaired in the allergic intestine, and the allergic infant may actually need to be given an increased quantity of vitamin A.

The gastrointestinal disturbances provoked by the soy bean are perhaps the best known disadvantages of soy bean preparations. One sees abnormal stools, diarrhea, sore buttocks, cramping, and occasionally, vomiting; whether these are caused by alteration of the bacterial flora or alteration of the pH of the stools by the soy bean, or its content of hemicellulose, is not known.

For optimal growth, amino acids are required at definite levels and in definite proportions to each other. Plants do not provide these amino acids in their proteins in the same ideal ratio as do animals. Even the soy bean is relatively deficient in methionine, thought necessary for human nutrition, although some recent research in animals would imply that this is not vital.[12]

The toxic hemagglutinating component of the soy bean is destroyed by heat when soy bean meal is prepared for animal or human consumption. However, heat adequate to destroy this toxin fully would admittedly destroy the nutritive value of the soy bean, and a compromise must be reached, with the result that trace amounts of this toxic substance are still to be found after processing.[13] Although there are not any known deleterious effects from these trace amounts, there is no proof as to whether cumulative effects over a prolonged period of time might not be injurious. Trace amounts of goitrogenic substance [14] and the antitrypsin enzymes of the soy bean [15] also survive the heat processing, and the question must be raised with these also as to the effect of prolonged use.

## Comment

No clinician will deny the striking results which can be obtained with the use of soy bean milks in those instances where children are sensitive to all types of mammalian milk. It is only the injudicious use of milk substitutes on small evidence of their necessity which I question. I am awaiting confirmation of recent reports [16] which attempt to prove that these artificial milks completely satisfy human needs.

I hesitate to refer to human infants data from short-term studies on animals which aim to show, among other things, that the lack of amino acids such as methionine, hitherto thought to be essential, can be offset in infant nutrition. One must not lose sight of the fact that nutritional imbalance may not be evidenced until long in the future. Long-range studies have yet to be made on children grown to adolescence and early adulthood who had been deprived of mammalian milk for long periods during infancy. It is usual to be satisfied with the nutrition of the child at the moment, without regard to this long-range potential.

Most extracts used to test milk sensitivity actually are composed of lactalbumin. Positive reactions to cutaneous tests with these would therefore imply specific sensitivity to this fraction. Furthermore, since casein sensitivity is rare (and its occurrence even doubted by some authors [6]), it would seem reasonable to assume that the individual who is allergic to cow's milk could be maintained on a diet of boiled or evaporated milk in which the lactalbumin has been altered. If cow's milk cannot be tolerated in any form, meat base formula can be tried, or substitution of goat's milk, whole or, preferably, evaporated, may be successful. Only when all attempts to use mammalian derivatives fail should the use of a vegetable base milk be considered. Moreover, the frequency with which sensitivity to milk is lost [17] would indicate the necessity for retrials of cow's milk in the diet at reasonably frequent intervals.

I have long had the feeling that we have not fully uncovered the wealth of enzymes, protective antibodies, and specific growth factors which nature has made available in mammalian milk. Future control of milk hypersensitiveness might lie in further isolating the antigenic components by electrophoretic and physiochemical methods, and with ever-increasing new techniques in promise. Selective alteration of these specific antigens without impairment of the nutritional value of milk would then be the goal.

## Summary and Conclusions

Allergy to cow's milk is not as frequent as uncritical evaluation would make it seem, and many of the disturbances induced by milk are not of allergic etiology. Sensitization to milk is usually to the lactalbumin fraction, and usually, therefore, it is logical to substitute a milk in which this protein has been altered.

There are many potentially deleterious effects referable to the soy bean. Investigation is urgently needed on the hitherto neglected traces of biologically active components in soy bean milk. Included in these studies should be the long-range effects of the antitryptic and hemagglutinating factors, of imbalance of essential amino acids, and of soyin and the goitrogenic toxins.

It would seem preferable to attempt to maintain nutrition with the use of mammalian-derived milks wherever possible, using the vegetable milks only in those instances where mammalian milk is not tolerated.

Due to space limitations, all protocols, charts, tables, roentgenograms, and case histories have been omitted.

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### References

1. Fries, J. H., and Mogil, M.: Roentgen Observations on Children with Gastrointestinal Allergy to Foods, J. Allergy **14**:310-321 (May) 1943. Fries, J. H., and Zizmor, J.: Roentgen Studies of Children with Alimentary Disturbances due to Food Allergy, Am. J. Dis. Child. **54**:1239-1251 (Dec.) 1937.

2. Miller, R. A.: Treatment of Ammoniacal Dermatitis with Folic Acid and Soya-Bean Milk, Brit. M. J. **1**:503 (March 2) 1957.

3. Fries, J. H., and Zizmor, J.: Gastrointestinal Allergy in Children: Clinical Reactions Resulting from Ingestion of Foods, J. Pediat. **16**:69-75 (Jan.) 1940.

4. Collins-Williams, C.: Incidence of Milk Allergy in Pediatric Practice, J. Pediat. **48**:39-47 (Jan.) 1956.

5. Glaser, J.: Allergy in Childhood, Publication 272, American Lecture Series, monograph in Bannerstone Division of American Lectures in Allergy, Springfield, Ill., Charles C Thomas, Publisher, 1956, p. 438.

6. Coca, A. F.; Walzer, M.; and Thommen, A. A.: Asthma and Hay Fever in Theory and Practice: Part 1. Hypersensitiveness, Anaphylaxis, Allergy, Springfield, Ill., Charles C Thomas, Publisher, 1931.

7. Coulson, E. J., and Stevens, H.: Serological Relationship of Bovine Whey Albumin to Serum Albumin, J. Biol. Chem. **187**:355-363 (Nov.) 1950.

8. Ratner, B., and Crawford, L. V.: Soybean: Anaphylactogenic Properties, Ann. Allergy **13**:289-295 (May-June) 1955.

9. Bass, M. H., and Caplan, J.: Vitamin A Deficiency in Infancy, J. Pediat. **47**:690-695 (Dec.) 1955.

10. Blackfan, K. D., and Wolbach, S. B.: Vitamin A Deficiency in Infants: Clinical and Pathological Study, J. Pediat. **3**:679-706 (Nov.) 1933. Bass and Caplan.[9]

11. Hillman, R. W., and Becker, N. H.: Absorption of Ingested Vitamin A, Gastroenterology **32**:738-746 (April) 1957.

12. Howard, H. W.; Block, R. J.; Anderson, D. W.; and Bauer, C. D.: Effect of Long Time Feeding of Soybean Infant Food Diet to White Rats, Ann. Allergy **14**:166-171 (March-April) 1956.

13. Liener, I. E., and Rose, J. E.: Soyin, Toxic Protein from Soybean: III. Immunochemical Properties, Proc. Soc. Exp. Biol. & Med. **83**:539-544 (July) 1953. Liener, I. E.: Photometric Determination of Hemagglutinating Activity of Soyin and Crude Soybean Extracts, Arch. Biochem. **54**:223-231 (Jan.) 1955.

14. Sharpless, G. R.; Pearsons, J.; and Prato, G. S.: Production of Goiter in Rats with Raw and with Treated Soy Bean Flour, J. Nutrition **17**:545-555 (June) 1939.

15. Kunitz, M.: Crystallization of Trypsin Inhibitor from Soybean, Science **101**:668 (June 29) 1945.

16. Wolpe, L. Z.: Three Year Review of Statistics for Milk Substitutes in Treatment of Infantile Eczema, Arch. Pediat. **64**:399-402 (Aug.) 1947. Howard and others.[12]

17. Fries, J. H.: Gastrointestinal Manifestations of Allergy in Children, Pediat. Clin. North America, pp. 995-1005, Nov., 1954.

## CHANGES IN REQUIREMENTS FOR CERTIFICATION IN RADIOLOGY

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These are days when considerable uneasiness is in the minds of radiologists relative to the use and practice of radiology. Some of it is due to the varied and controversial reports from scientific bodies concerning the possible genetic changes due to radiation, and some of it, entirely emotional, is brought about by the concern of the general public because of the releases in the lay press. All of this does not, however, change the problem of the radiologist to provide the finest care for the patient which includes the necessary protection.

At the risk of being elementary, it may be helpful to review the terms radiology and roentgenology. The American Board of Radiology defines radiology as the use of radiant energy for diagnosis and treatment (use of radium and isotopes as well as x-ray); and roentgenology as the use of x-rays for diagnosis and treatment. Certificates are being given in diagnostic roentgenology, therapeutic radiology, radiology, and radiology with nuclear medicine. As a matter of information, there are about 5,000 physicians who have been certified by the American Board of Radiology and are practicing either radi-

*Radiology is the use of radiant energy for diagnosis and treatment, and includes the use of radium and isotopes as well as x-ray. Roentgenology is the use of x-rays for diagnosis and treatment. Rapid advancements in the field of radiology are such that, after 1960, examinations in radiology, given by The American Board of Radiology, will automatically include nuclear medicine.*

Chairman's address, read before the Section on Radiology at the 106th Annual Meeting of the American Medical Association, New York, June 3, 1957.

ology or roentgenology. The American Board of Radiology, being constantly alert to the rapid advancement in the field of radiology, has in the past few years made constructive changes in the requirements for examination, the type of certificate issued, and the material covered by examination. At present, these are the regulations of the Board of Radiology for certification in the specialty.

New applicants in general radiology need three years' training in radiology in an approved center. In preparation for examination, the board will not require a specified number of personal experiences or applications of any branch of radiology, for example, radium, gastrointestinal fluoroscopy, or isotopes. However, should the candidate apply in therapeutic radiology only, personal experience in the application of radium and isotopes, as well as proficiency in roentgen therapy, is required. Until 1960, an applicant in radiology or therapeutic radiology may request an examination to include nuclear medicine. But, after 1960, examinations in radiology and therapeutic radiology will automatically include nuclear medicine.

For those who began their training in radiology or any branch thereof on July 1, 1956, a written examination in physics and pathology will be given at the completion of their formal training. This examination will act as a screening medium and will be given in various centers of the United States and Canada at intervals of six months. Acceptance for a subsequent oral examination is contingent upon passing the written examination. In the event of failure, the written examination may be repeated in six months. This procedure eliminates the former oral examination in physics. The present therapy portion of the oral examination will remain the same and will be given by three examiners. For those taking this examination until June 30, 1960, the examination will include an additional examiner in clinical therapy. This means seven examiners in radiology or four examiners in therapeutic radiology. An applicant failing in part of the examination in radiology will not be granted a certificate in the portion which he has passed.

New applicants for diagnostic roentgenology or therapeutic radiology need three years' training also, but this shall include one year basic training in pathology, physics, and basic radiologic techniques plus two years of clinical training in the designated branch. The examination for this will be more comprehensive than in the respective portion of general radiology and will require from three to six examiners.

Diplomates already certified in radiology or therapeutic radiology may take an examination for certification in nuclear medicine. The present plan for this examination is an hour of oral questioning using two clinical examiners and one examiner in nuclear physics.

Over a period of several years, a special committee of the board, with Dr. Douglas Quick as chairman, has made a lengthy, comprehensive study of the field of nuclear medicine. This has entailed an immense amount of study and evaluation. What the examination should cover, how much actual experience should be required, what places of training are acceptable, duration of training, adequate training and experience of examiners, and what examination technique is to be used are all phases that have been given mature and serious consideration. I need not emphasize what a valuable contribution this survey has been. The recommendations of Dr. Quick's committee have been adopted by the American Board of Radiology.

After 16 years of examining on the American Board of Radiology, I have several comments that seem appropriate. An amazing number of candidates from large training centers are unable to position a patient for an x-ray examination, make an exposure, outline an adequate examination, or produce a diagnostic film. This places them in the vulnerable position of being dependent upon the technician. Who trains the technician? Are we entirely dependent upon such training?

Another amazing factor is the ability of candidates to diagnose correctly the unusual. They can and do discuss the points of diagnosis well, but I am more amazed in the frequency of candidates absolutely missing a fracture of the carpal scaphoid, or a complete dislocation of the carpal navicular. The relations, the articulations, and disturbances of the tarsals seem to be given little consideration. There is a definite lack of appreciation of the function and conditions involving the articular processes of the lumbar spine. Apparently, they have never considered the epiphyses of the articular processes of the lumbar spine.

Training in some of the larger institutions seems to be lacking in follow-up examinations. I am thinking especially of operative bone cases, bone grafts, bone chips, intramedullary nails, pinned hips, and even the healing of fractures. Perhaps the patients are not followed up at that institution, but are transferred to some distant place. It is my opinion that these follow-up examinations are most important from the standpoint of the patient as well as the radiologists. I am fully convinced that training should be amplified in the foregoing named facets because the resident may not always remain in a large institution, but may find himself in a locality where the so-called bread and butter type of radiology is not only important but may well produce a large portion of his practice.

It is also my firm conviction that the residents' training should include at least elementary economics. This is probably one of the most striking omissions in preparing a resident for either departmental or private practice of radiology. Perhaps this

can be most aptly illustrated by a quotation from a letter recently received in my office, "As my final year of training grows rapidly to a close, I find that perhaps the most serious omission is with regard to the economics of radiology."

The changes in examinations and requirements for certification in radiology will no doubt produce many questions and discussions. There will be problems arising in specific cases and these problems will have to be adjusted as occasion demands. The present status is fluid and by no means final. You may be assured that mature study and consideration are being given to every phase before action is taken.

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# THE ROLE OF PHYSICAL MEDICINE AND REHABILITATION IN RHEUMATIC HEART DISEASE

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*Rheumatic fever is the principal cause of heart disease from childhood well into adult life, but most persons with chronic rheumatic heart disease can be helped to enjoy productive lives by adequate total rehabilitation. The majority can be employed without any special concessions, after proper orientation and training, by matching the person's mental and physical capacities with the requirements of the proposed job. Orientation and education of the patient and his family will help to produce a favorable environment free from undue tensions, so that a therapeutic balance between work, play, and rest can be achieved.*

Success in physical medicine and rehabilitation for those with rheumatic heart disease can only be achieved when the activities are completely integrated and coordinated with the total over-all clinical program (medical, nursing, dietetic, social, educational, psychological, vocational, and recreational). It is important to understand that the permanent heart damage frequently resulting from rheumatic fever is the most disabling complication of the disease. However, many individuals with this type of heart disease can be rehabilitated to live useful, productive lives. Advances that are being made in the prophylactic and definitive treatment of rheumatic fever will no doubt decrease the incidence of rheumatic heart disease.

The exact pathogenesis of rheumatic fever remains unknown, but it is generally believed that it develops as a complication of infection with group A streptococci. Many other factors, such as epidemiologic, genetic, and immunological, no doubt are also important contributors in the disease. It is a recurring systemic disease affecting the entire body, but especially the heart, blood vessels, and joints.

The most important objective in the definitive treatment is not so much the control of the polyarthritis of rheumatic fever, but the effect on the heart. The arthritic manifestations, even if severe in the acute stage, are usually controlled; however, it is the acute carditis which often leads to permanent heart damage that is the serious problem.

For successful total rehabilitation of those with rheumatic heart disease, in addition to a thorough knowledge of physical medicine and rehabilitation procedures, the physiatrist must have a clear understanding of the incidence, pathology, clinical manifestations, and prognosis, as well as the role of vocational counseling and selective job placement. These subjects will be briefly reviewed.

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Chairman's address, read before the Section on Physical Medicine at the 106th Annual Meeting of the American Medical Association, New York, June 5, 1957.

## Incidence

Rheumatic fever is the principal cause of heart disease from childhood well on into middle life. White [1] states that in almost half of all cases of rheumatic heart disease present in adults there is no history of "acute rheumatism," but this is not likely to continue to be the situation in the future in view of the increasing frequency of routine examinations of young children by doctors in schools and in private practice, with the discovery of newly appearing heart murmurs, especially on occasions when a child feels ill or appears to be so. Levine [2] states that the failure to recognize atypical cases of rheu-

matic infection accounts for the fact that in many instances valvular disease of the heart is seen in adults when no history of rheumatic fever or chorea can be uncovered. In fact, he believes that a condition like mitral stenosis is due to only one disease, namely, rheumatic infection. In only about 50% of the cases will there be a definite history of rheumatic fever or chorea, while in the other 50% rheumatic infection occurred years previously, but presented itself in an atypical form, though with sufficiently characteristic features to be recognized if these unusual aspects of the rheumatic infection had been appreciated. The rate of onset of rheumatic fever rises sharply from early childhood to a peak at approximately 7 years of age and then declines slightly until puberty, then falls rapidly after puberty. Occasionally initial acute attacks of rheumatic fever occur after the age of 35 years. In practically all cases of rheumatic fever, as part of the rheumatic process, there develops a carditis which may vary from mild degree and reversibility to a severe degree with permanent heart damage with variable degrees of disability actually due to the heart changes.

Engleman and others,[3] in a four to eight year follow-up, showed that out of 98 veterans with rheumatic fever occurring during service only 18 or 18.2% subsequently developed rheumatic heart disease. Characteristic lesions with permanent valvular deformity developed in 75% of those with rheumatic carditis. The cardiac damage usually bears no absolute relationship to the severity of the arthritic and systemic symptoms. A prolonged attack or recurrence of rheumatic fever is likely to be complicated by heart damage. Coburn and Young[4] have described the high incidence of rheumatic fever after upper respiratory infection in the armed forces during World War II. Climate, altitude, and humidity probably have only a minor role in the rate of attacks of rheumatic fever.

The Chicago Board of Health report for 1953 revealed that 55% of the total deaths from all causes were due to cardiovascular disease and of this number 2.6% were due to rheumatic heart disease. The state of Illinois reported for 1954 that out of a total of 38,725 deaths due to heart disease 1,219 deaths or 3.2% were due to chronic rheumatic heart disease. These deaths were distributed according to age as follows: 0 to 4 years, 2 deaths; 5 to 14, 7; 15 to 24, 40; 25 to 44, 290; 45 to 64, 524; and over 65, 356.

It is evident that the greatest percentage of deaths, 43%, occurred in the 45-to-64 age group, and therefore it is significant that the majority of those with rheumatic heart disease can, through total rehabilitation, enjoy many years of happiness and productive living.

The incidence of greatest recurrence of rheumatic fever occurs in the first year of the attack and decreases with each succeeding year. Probably over 50% of recurrences occur within the three years after the initial attack. The balance of the recurrences decrease with the age of the individual and are rarely seen after the age of 30 years.

## Pathology in Rheumatic Heart Disease

Gross and Jezer[5] list the following principal pathological changes that take place in rheumatic heart disease, the extent of which depends upon the severity of the rheumatic process and the number of recurrences or new attacks with the group A streptococci.

*Myocarditis.*—The myocardium becomes involved in practically 100% of those patients with acute rheumatic fever, varying from mild to very severe myocardial damage. If the damage is severe, this may lead to marked cardiac dilatation and failure.

*Pericarditis.*—Generally, pericarditis is associated with myocardial and endocardial involvement, although pericarditis with or without effusion may be the presenting or predominant feature of rheumatic fever.

*Endocarditis.*—Endocarditis occurs frequently in the auricles, especially the left, and the heart valves.

*Valvular Involvement.*—There may be single or multiple valvular involvement, usually in the following order of frequency: mitral valve only, aortic and mitral valves, aortic valve only, tricuspid valve occasionally, and pulmonary valve rarely. It is the healing of the vegetations on the involved valves that leads to mechanical deformity, with or without insufficiency or stenosis, resulting in a disturbance in the hemodynamic mechanism.

*Cardiac Conduction.*—The cardiac conduction system may be temporarily or permanently involved during an acute attack of rheumatic fever resulting in disturbances in rhythm, such as partial or complete block, premature auricular or ventricular contractions, paroxysmal tachycardia, auricular fibrillation or flutter, prolonged atrioventricular conduction time, and other changes, although some of these may only be temporary in nature.

*Vascular Lesions.*—In rheumatic fever there may be vascular lesions involving the coronary, aortic, renal, carotid, mesenteric, and other arteries. Coronary artery involvement may give symptoms of angina pectoris.

Cortical and subcortical brain damage with personality changes, anxieties, depression states, and perhaps even latent tendencies towards psychoses, which may appear under stress, have been reported.

## Clinical Manifestations of Rheumatic Heart Disease

There are tremendous variations in the clinical manifestations and the course of rheumatic heart disease. The heart findings will depend upon many factors, the most important of which are (1) the age of the patient at the time of onset of the rheumatic

fever, (2) the severity of the infection, (3) the duration of the infection, and (4) the frequency and severity of recurrences.

Some individuals, especially those who have had only one attack of rheumatic fever, may have a mild murmur with little or no cardiac enlargement. Others with severe recurrences may have a persistent carditis with progressive cardiac enlargement and, later, myocardial insufficiency and failure. Many patients are symptomless until later in life when, during an examination for symptoms associated with coronary insufficiency or hypertension, a cardiac murmur is found which may be due to an old valvular lesion.

Many children with rheumatic heart disease after a single attack of rheumatic fever will have a mild systolic murmur, no myocardial insufficiency, and little or no enlargement of the heart. In those children who have had a number of attacks of rheumatic fever with carditis, there is frequently found involvement of one or more valves with significant cardiac enlargement but no myocardial insufficiency or congestive failure. The cardiac reserve is not altered, and when the carditis subsides the murmurs decrease in intensity with the decrease in the heart size. In children with recurrent attacks of rheumatic fever, carditis and cardiac involvement is almost always present. Wilson,[6] in her study of 673 children who had rheumatic fever for eight years, reported that all but 4 had cardiac involvement of varying degrees. In nearly half of these children there were multiple valvular lesions with moderate to marked cardiac enlargement. Continued active carditis leads toward a poor prognosis as valvular disease results in cardiac enlargement, progressive heart failure, and death.

In adults rheumatic heart disease may be of the mild type or the less common type with severe prolonged carditis and inevitable cardiac failure. In the mild type there is evidence of involvement of one or more valves, moderate or no cardiac enlargement, and presence or absence of cardiac reserve on physical exertion. Recurrences are infrequent in adults and when they do occur are mild, with perhaps some polyarthritis and usually no additional cardiac pathology. Myocardial insufficiency is largely due to the mechanical changes in the hemodynamics due to valvular changes, although auricular fibrillation is an additional factor, especially when associated with ventricular tachycardia. Cardiac reserve may slowly decrease with the years, or failure may be of very short duration. It is not uncommon for an adult with chronic rheumatic heart disease to develop progressive cardiac dilatation with failure after carditis that evolved several weeks after an attack of acute upper respiratory infection. There are usually no significant changes in the heart during pregnancy, unless due to a superimposed infection; however, for those women with rheumatic heart disease who become pregnant, it is extremely important to have adequate prenatal, natal, and postnatal care.

### Physical Medicine and Rehabilitation Program

A coordinated, medically directed and supervised physical medicine and rehabilitation program is part of the total management of individuals with rheumatic heart disease. In the Veterans Administration, the physical medicine and rehabilitation staff consists of the physiatrist (physician specializing in physical medicine and rehabilitation), the rehabilitation coordinator, and the physical, corrective, occupational, manual arts, and educational therapists. Some civilian institutions and the armed forces have

Fig. 1.—A young adult with rheumatic heart disease participating in metal spinning as part of his medically prescribed rehabilitation program. The activity is creative, develops dexterity, increases work capacity, and can also be exploratory for vocational planning.

somewhat similar organizations. It is important not only to plan for the immediate care of the patient during his hospitalization, but also for the much longer posthospital period of time after discharge. The patient's future must be planned on the basis of matching the physical and mental capacity of the individual with the physical and mental activity of job requirements. There must be no rehabilitation routines. Baker and I[7] listed the objectives of total rehabilitation for the cardiac patient which are applicable for those with rheumatic heart disease.

The basis of activity participation should be on the complete over-all medical status of the patient and not, as frequently happens, only on the basis of the presence or absence of a heart murmur. Frequently, the detrimental effect of the psychological and emotional stress of a patient following ill-advised activity restriction is actually greater than that due to the cardiac involvement per se. Although the patient's activity must depend upon the question of activity or quiescence of the rheumatic process, this fact may be extremely difficult to determine with exactness according to present-day techniques.

The following criteria of Jones,[8] wherein the manifestations of the disease are divided into major and minor categories, are useful in determining activity of the rheumatic process: (1) Major manifestations are carditis, polyarthritis, chorea, subcutaneous nodules, and erythema marginatum; and (2) minor manifestations are fever, elevated sedimentation rate, positive C-reactive protein, evidence of Streptococcus infection, and history of previous attack of rheumatic fever.

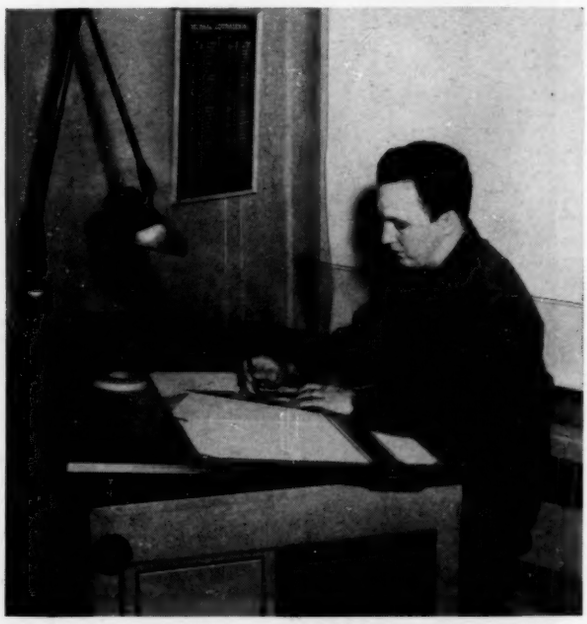

Fig. 2.—A patient with rheumatic heart disease participating in drafting as part of his medically prescribed rehabilitation program. The activity is being used as vocational exploration for this individual, yet it is creative and affords other therapeutic benefits.

An individual with minimal cardiac findings having a nonchanging clinical picture, together with normal laboratory tests and no recurrent attacks of rheumatic fever, may, after many years, develop signs and symptoms of cardiac failure and death. Postmortem examination of the heart of such an individual may reveal Aschoff bodies which could be indicative of a chronic, active, inflammatory process.

A progressive, closely directed and supervised activity program balanced between work, play, and rest should be instituted. All physical medicine and rehabilitation activities are directed and supervised by the physiatrist having close rapport with the internist or cardiologist. The therapists must be thoroughly indoctrinated and trained so that they will have a constant awareness of any untoward reactions that may occur during treatment. Proper knowledge and experience in taking pulse and respiration is of extreme importance. The following criteria have been established to aid in the guidance of the rehabilitation activities. These are not routine measures and are merely used as an aid in guiding the program.

Time and energy consumed in rehabilitation activities depend upon the patient's general condition, e. g., faintness, fatigue, sweating, and nose bleeds. The rate, volume, and rhythm of the pulse is taken for one full minute prior to and at the completion of any activity and again after a three-minute rest period. If there is an increase of more than 10 in the rate or any change noted in volume or rhythm, the therapy is discontinued and this fact reported to the doctor. The character and rate of respiration is noted and any unusual change is reported. The therapy is discontinued on signs of breathlessness. If any pain develops, such as in the chest, joints, arms, head, or abdomen during activity, the treatment is discontinued at once and the findings are reported to the doctor. Further activity is resumed only after a reevaluation of the patient's condition is made by the doctor. A good rule for all therapists to follow is to promptly discontinue treatment whenever any unusual signs or symptoms develop, which are reported immediately to the doctor and recorded in the patient's progress notes. The child or adult progresses along successive stages of the program as his frequently checked medical condition warrants. The patient should never be forced beyond a level of activity at which symptoms appear. It is unrealistic to believe that severe cardiac damage will not limit the patient's activities.

During the acute stage of the rheumatic attack and while anti-inflammatory agents are being used, the patient is usually kept in bed, but this does not necessarily mean complete bed rest. The kind and amount of activity while in bed will depend upon the severity of the attack, the degree of cardiac involvement, the effectiveness of therapy, and the effect of the graded activity on the general over-all medical picture. Those with no clinical evidence of carditis who respond promptly to anti-inflammatory drugs are frequently permitted bath room privileges, sitting in a chair for specific periods of time, and measured amounts of reading, writing, working with leather, metals, wood, plastics, and other simple projects. For the first year after the acute attack of rheumatic fever, it appears to be wise to avoid

severe physical and mental exertion of either employment or competitive sports. Thereafter, if the heart is functioning within normal limits, activity restrictions are not enforced. However, in individuals with rheumatic mitral or aortic insufficiency it is well to restrict activity even if on a prophylactic basis inasmuch as there is a disturbance in hemodynamics due to altered mechanical functioning of the damaged valves. Later, carefully supervised measured distances of ambulation are instituted with adequate rest periods. It must be realized that when a patient, either child or adult, is needlessly placed in a restricted bed-rest program, many psychological and emotional problems will be created that may have a direct effect on the clinical course. Boredom, which is so frequently associated with the slow passage of time during illness, especially when confined to bed, must be avoided.

The early use of the bedside commode instead of the bedpan should be instituted unless there are specific contraindications. Benton, Brown, and Rusk [9] in their clinical investigation have shown that the energy expenditure in terms of oxygen consumption above resting levels for cardiac patients was 50.7% higher on the bedpan than on the commode. The use of the bedside commode reduces the patient's physical stress and at the same time gives him an excellent psychological boost.

There must be a continual awareness regarding the rapid onset of general body deconditioning from inactivity with its resulting detrimental physical and mental effects and added "nervousness" and "anxiety tension." The specific needs of the patient are met by maintaining a therapeutic balance between rest and activity. Function of the extremities must be maintained through exercise and thus limitation of joint motion can be prevented. The patient, whether a child or an adult, needs, in addition to controlled physical activity, psychological counseling. Emotional rest, particularly in a child, is frequently of greater importance than the physical rest. One must be on the alert for and immediately resolve any disturbing psychological and emotional factors which will result in a poor therapeutic environment whether the individual is in an institution or at home.

In the presence of severe cardiac involvement or symptoms of diminished cardiac reserve, a more restricted activity program must be followed with greater emphasis on physical and mental rest. Close continued observation, especially during the acute attack, is vital so that at the first clinical evidence of a relapse the total rehabilitation program can be correspondingly altered. In those individuals with no evidence of rheumatic activity but with moderate or severe cardiac damage, the degree of physical activity is frequently limited by the patient himself. With medical guidance he soon learns the amount of participation possible within desirable therapeutic limits to avoid heart failure.

Stollerman [10] has very aptly pointed out that if, upon withdrawal of all medicaments, there is no evidence of inflammatory processes, the patient should still continue to be observed closely for there may be a relapse as late as eight or more weeks, even in the absence of a new streptococcic infection. These types of relapses occur in 95% of instances within four to five weeks after medication has been stopped. Later relapses are usually noted when advanced heart disease is present and when the subsidence of active carditis cannot be accurately judged. Beyond the eight-week convalescent period, new attacks of rheumatic fever do not seem to occur in the absence of other streptococcic infection.

### Rehabilitation Activities

Figs. 1, 2, and 3 show adults with rheumatic heart disease participating in medically prescribed rehabilitation activities such as metal spinning, drafting, and electronic testing and repair which not only increase work capacity and develop skill and dexterity but are also exploratory in planning for both an initial vocational goal or an entirely new goal for those individuals for whom it would be medically inadvisable to return to their former type of work. Many other activities are made available to the patient such as wood turning, machining, ceramics, photography, leather tooling, jewelry making, plastics, household appliance repair, typing, and educational therapy. By having a variety of activities the

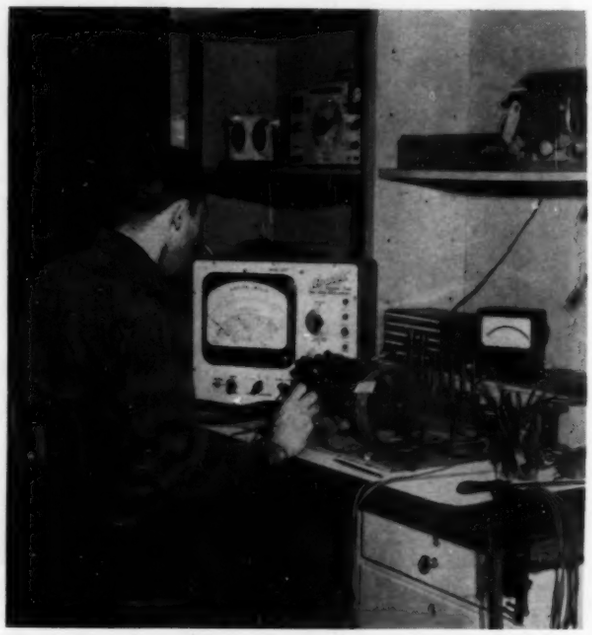

Fig. 3.—A young adult with rheumatic heart disease participating in electronic testing and repair as part of his medically prescribed rehabilitation program. In addition to developing skill and dexterity, the activity is creative and is also being used as exploratory in developing a vocational goal.

patient's interest and motivation are kept at a maximum, for with lack of motivation rehabilitation progress is greatly hindered. These activities also develop creativeness.

Fig. 4 shows two young men with rheumatic heart disease on a medically prescribed, carefully supervised, graduated-exercise program using the pulley weights and exercising bicycle starting with minimal resistance. The resistive weights and the number of movements of the pulley weights are gradually increased. The number of times that the weights are lifted is automatically registered on a mechanical ratchet counter activated through an elastic band attached to the ropes. In this manner one can accurately judge the amount of work being done by the patient in a specified period of time. Similar ratchet counters are attached to the exercising bicycle and other types of equipment for more accurate measurements of work performance. Walking measured distances and climbing stairs under close supervision is part of the exercise program.

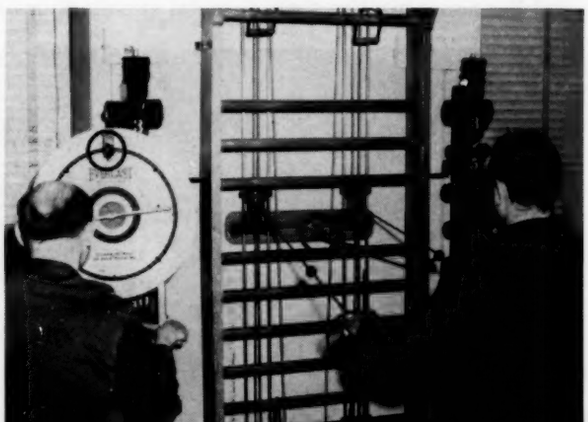

Fig. 4.—Two young adults with rheumatic heart disease engaged in medically prescribed progressive exercise program using pulley weights and exercising bicycle starting with minimal resistance in order to gradually increase work capacity. Note the mechanical ratchet counters on the equipment (shown in circles) to register the number of movements.

While the patient is on the rehabilitation program, the therapist must be continually on the alert for any of the following signs or symptoms that would necessitate a reassessment of the activities: fatigue, cough, shortness of breath, chest or joint pain, restlessness, epistaxis, or any clinical or laboratory evidence of respiratory or other infections. Participation in a progressive activity program affords the doctor, as well as others on the staff of the hospital or institution, an assessment of the individual's ability to do specific amounts of work. However, what is perhaps just as important, or in many cases more important, is that the patient has a realistic awareness of his ability to perform work including self-care activities which definitely helps alleviate apprehension and fear that usually accompany heart disease.

Many hospitals and other institutions throughout the country and in the Chicago area, such as La-Rabida Jackson Park Sanitarium in Chicago,[11] and Herrick House in Bartlett, Ill., have excellent programs for the medical care and rehabilitation of children with rheumatic fever and rheumatic heart disease. A program of closely supervised progressive activities during the child's institutional stay with careful follow-up after discharge has resulted in the majority of these children returning to school and, later, finding satisfactory employment. Research and clinical investigation is a constant endeavor.

Simon and co-workers,[12] in their work with rheumatic fever and rheumatic heart disease at Herrick House, followed an activity guide schedule of five stages (0 to 4). Stage 0 is when the child is at bed rest but has bathroom privileges, eats at a table in the room, has one activity a day in a wheel chair, observes television, and may go for a car ride on an individual basis. The physical activity is slowly increased so that over a period varying from two to five months, if the general medical condition warrants, the patient gradually progresses to full activity which is stage 4 and consists of the following activities: rowing (one hour), baseball (can run bases), hiking (unlimited), swinging, swimming, dancing, ice skating, and sledding. Children with severe heart damage and reduced cardiac reserve will progress more slowly. In their program, children with severe heart damage may reach a plateau of maximum activity at the mildly restricted stage 3 level which consists of hikes (2 miles), rowing (20 minutes), baseball (no running bases), archery, and folk dancing (no jitterbugging) and sometimes even at stage 2 level (fishing, horseshoes, mild swinging, and shuffleboard). The important factor is that the program must meet the specific needs of the individual person. With even the slightest amount of evidence of rheumatic activity the patient should be confined to bed, his physical and mental activities greatly restricted, and his total activity program reevaluated.

Karpovich and others,[13] in their work at the Army Air Force School of Aviation Medicine, Randolph Field, Texas, found that in those individuals who had recovered from acute rheumatic fever and were placed on a program of supervised graded exercises there were no harmful effects to the hearts of those men. They concluded that patients convalescing from rheumatic fever could safely participate in a graded system of physical exercises within two weeks after clinical cessation of the pathological,

rheumatic activity. The conventional delay in the beginning of physical reconditioning was reduced from 77.3 days to 16.2 days without causing an increase in incidence of the cardiac change during the 6 to 12 months of observation.

It must be remembered that a certain number of patients with rheumatic heart disease will continue to gradually become worse. Perhaps one of the difficulties in guiding the rehabilitation activities of these patients is in not having an accurate method of determining if the rheumatic process is completely inactive. Stollerman and others[14] have reported on the relationship of immune responses to group A streptococci to the course of acute, chronic, and recurrent rheumatic fever. There is always the possibility of the presence of a very low grade "smoldering" rheumatic process even though all manifestations of active inflammation are absent, such as the presence of C-reactive protein in the blood, elevation of erythrocyte sedimentation rate, increase in white blood cell count, fever, tachycardia, polyarthritis, changes in heart murmurs, and electrocardiogram changes.

A rheumatic process may be in an active, quiescent, or inactive phase. The quiescent phase is when all manifestations of active disease have disappeared. However, it is extremely difficult at this time to be absolutely certain that all activity of the rheumatic process has ceased and the phase of inactivity has been reached. All of these factors are important in order to get a complete and over-all medical evaluation for activity control. Changes in the over-all medical picture will of necessity alter the individual's physical and mental activities.

One frequently hears of patients with iatrogenic cardiac neuroses. If there is such an entity, then this can be lessened or entirely eliminated by the physician having the proper perspective and understanding of the philosophy of total rehabilitation for those with heart disease. Early orientation of the patient and his family regarding rheumatic heart disease will aid in preventing cardiac neurosis and secure a more favorable environment for maximum adjustment to the disease and any disability.

It must be constantly stressed that during any period of reactivation or reinfection with the group A streptococci, or during any acute illness, especially acute respiratory infections, adequate medical treatment must be promptly instituted together with judicious control of the patient's activities.

A certain number of children with acute rheumatic fever develop Sydenham's chorea. Taranta and Stollerman[15] state that as long as active chorea persists it is well to further control the individual's physical and mental activities and produce a more favorable balance between rest and activity. Upon cessation of the symptoms of chorea, additional activities can be resumed depending on the cardiac status.

### Vocational Counseling and Selective Job Placement

In dealing with children having rheumatic heart disease, it is usually sufficient to institute or continue an adequate educational program. In conjunction with the local board of education and other agencies, the child's education can continue during his hospitalization and again when he returns to his home. A medical determination is made as to whether the child shall attend regular or special school or receive home tutoring. Whether child or adult, full use must be made of the hospitalization period.

In the adult, early vocational counseling and planning are important, particularly with those who, due to their cardiac damage and diminished cardiac reserve, should not return to their former type of employment. The rehabilitation program at the hospital or center should simulate at least the physical demands of the job under consideration even though the psychological factors and environment are difficult to duplicate. My co-workers and I[16] have listed the following factors that are important in attempting to determine the employability of individuals with heart disease: Is the patient psychologically prepared and willing to resume work? Can he return to his former job or similar type of employment? Is he capable of full-time work or must he be restricted to a part-time situation? Must he be limited to a sheltered workshop environment? Will the work situation present problems resulting in "nervous tension" and anxiety? Can he safely travel to and from his place of work each day? Will there be a proper employer-employee relationship to minimize any misunderstandings and difficulties that may predispose to fear and to eventual frustration?

With proper orientation, training, and selective job placement, wherein the individual's physical and mental abilities are matched with the physical and mental job requirements, the majority of persons with rheumatic heart disease can be employed without any special concessions, sympathy, or the like.

Many patients with heart disease are unemployed, not on account of their heart disease per se, but as a result of fear, apprehension, and anxiety brought on by ill-advised, unnecessary activity restriction; misunderstanding and lack of orientation regarding their disease; and the almost constant focus on the publicity that "heart disease is the number one killer." In a study of 580 patients with various cardiac diseases,[17] it was concluded that occupational activity does not necessarily lead to progression of heart disease or deterioration of the physical condition of the patient. As a matter of fact, a substantial number of patients with cardiac disease show improvement while in an employed status.

Sometimes the patient's work or his work environment must be modified so as to minimize psychological and emotional stress. At times it may be advantageous to start employment in a sheltered workshop situation, or even part-time employment on his for-

mer job, or a newly selected job that better meets his requirements. The individual with rheumatic heart disease should be advised to return periodically for reexaminations in order to assess the over-all employment picture.

For the housewife with severe impairment of cardiac reserve, the physical exertion can be decreased and at the same time the work efficiency can be increased by the proper placement of the sink, cabinets, refrigerator, cleaning utensils, and other appliances in the kitchen and around the house.

## Prognosis

It is difficult to make a prognosis in heart disease even though the diagnosis has been accurately established. There are great variations in the life span of individuals with rheumatic heart disease. It can perhaps be expected that, all things being equal, the patient having the greater amount of dyspnea, more evidence of peripheral congestion and other symptoms and signs of cardiac failure, has the more serious outlook. Stollerman [18] has shown that with the prompt eradication of group A streptococci, continuous prophylaxis against subsequent infection with this organism is essential. The adequate suppression of inflammatory processes, cardiac surgery when indicated, and the institution of a medically guided total rehabilitation program have steadily improved the prognosis for those with rheumatic heart disease with an increase in the actual number of years of productive living.

## Conclusions

Rheumatic fever is the principal cause of heart disease from childhood well on into middle life. A well organized and directed physical medicine and rehabilitation program which is coordinated and integrated with the over-all medical program including psychologist, social service, vocational counseling, and selective job placement is vital for the fulfillment of a realistic goal for those with rheumatic heart disease. This concept is also economically sound. Physical medicine and rehabilitation is part of the total medical care and does not supplant or supersede good medical management. Prompt institution of indicated rehabilitation procedures for a sufficient period of time is extremely important. Full use must be made of the patient's hospitalization period. A therapeutic balance between work, play, and rest is important. Creativeness in activity participation should be fostered.

The majority of individuals with chronic rheumatic heart disease can enjoy useful, productive lives through adequate total rehabilitation. Proper orientation and education of the patient and his family will result in a more feasible therapeutic environment with a minimum of psychological and emotional stress.

There are no fixed rules governing the activity program. The type, rate, and amount of rehabilitation activities is governed by the over-all medical picture which must constantly be assessed. Present techniques are wanting in order to differentiate with certainty between the inactive and the quiescent phase of the rheumatic process for guiding the patient's activities.

County, state, and federal resources, such as educational facilities, social service, vocational counseling, and visiting nursing service should be called upon whenever indicated. Selected job placement should be part of the objectives in the total program so that the patient's over-all physical and mental abilities are matched with the physical and mental job requirements. The American Heart Association and other organizations have been instrumental for much of the progress in proper understanding by both the medical profession and the public of the problems associated with heart disease.

Additional means and methods for quickly evaluating cardiac load and energy expenditure while the patient is performing specific activities will be of tremendous aid in planning the rehabilitation program. Improved prophylactic measures to prevent recurrences, as well as new infections with the group A Streptococcus, will decrease the incidence as well as the severity of rheumatic heart disease.

Continued research in preventive medicine, infectious diseases, and heart disease, including heart surgery, will bring an earlier realization of the joys and rewards of a fuller life for those with rheumatic heart disease, and perhaps the complete eradication of this disease.

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### References

1. White, P. D.: Clues in Diagnosis and Treatment of Heart Disease, Publication 242, American Lecture Series, monograph in Bannerstone division of American Lectures in Circulation, Springfield, Ill., Charles C Thomas, Publisher, 1955.

2. Levine, S. A.: Clinical Heart Disease, Philadelphia, W. B. Saunders Company, 1951.

3. Engleman, E. P.; Hollister, L. E.; and Kolb, F. O.: Sequelae of Rheumatic Fever in Men: Four to Eight Year Follow-up Study, J. A. M. A. **155:**1134-1140 (July 24) 1954.

4. Coburn, A. F., and Young, D. C.: Epidemiology of Hemolytic Streptococcus During World War II in United States Navy, Baltimore, Williams & Wilkins Company, 1949.

5. Gross, H., and Jezer, A.: Treatment of Heart Disease, Philadelphia, W. B. Saunders Company, 1956.

6. Wilson, M. G.: Rheumatic Fever: Studies of Epidemiology, Manifestations, Diagnosis and Treatment of the Disease During First Three Decades, New York, Commonwealth Fund, 1940.

7. Newman, L. B., and Baker, L. A.: Total Rehabilitation of Cardiac Patient, Illinois M. J. **106:**189-193 (Sept.) 1954.

8. Jones, T. D.: Diagnosis of Rheumatic Fever, J. A. M. A. **126:**481-484 (Oct. 21) 1944.

9. Benton, J. G.; Brown, H.; and Rusk, H. A.: Energy Expended by Patients on Bedpan and Bedside Commode, J. A. M. A. **144:**1443-1447 (Dec. 23) 1950.

10. Stollerman, G. H.: Treatment in Internal Medicine: Rheumatic Fever, A. M. A. Arch. Int. Med. **98:**211-220 (Aug.) 1956.
11. LaRabida Jackson Park Sanitarium: New Hope for Childrens Hearts, Chicago, 1953-1954.
12. Simon, A. J.; Mack, I.; and Rosenblum, P.: Accelerated Rehabilitation in Rheumatic Fever, A. M. A. Am. J. Dis. Child. **83:**454-462 (April) 1952.
13. Karpovich, P. V., and others: Physical Reconditioning After Rheumatic Fever, J. A. M. A. **130:**1198-1203 (April 27) 1946.
14. Stollerman, G. H.; Lewis, A. J.; Schultz, I.; and Taranta, A.: Relationship of Immune Response to Group A Streptococci to Course of Acute, Chronic and Recurrent Rheumatic Fever, Am. J. Med. **20:**163-169 (Feb.) 1956.
15. Taranta, A., and Stollerman, G. H.: Relationship of Sydenham's Chorea to Infection with Group A Streptococci, Am. J. Med. **20:**170-175 (Feb.) 1956.
16. Newman, L. B.; Wasserman, R. R.; and Borden, C.: Productive Living for Those with Heart Disease: Role of Physical Medicine and Rehabilitation, Arch. Phys. Med. **37:**137-149 (March) 1956.
17. Staff of Work Classification Unit, Adult Cardiac Clinic, Third (New York University) Medical Division, Bellevue Hospital, New York: Effects of Employment on Course of Heart Disease, A. M. A. Arch. Indust. Hyg. **3:**367-374 (April) 1951.
18. Stollerman, G. H.: Prevention of Rheumatic Fever by Use of Antibiotics, Bull. New York Acad. Med. **31:**165-180 (March) 1955.

## CLINICAL NOTES

# DIAGNOSTIC PROCEDURES FOR PHEOCHROMOCYTOMA

### TECHNIQUE OF ASSAY OF URINE IN RAT AND DEMONSTRATION OF PIPEROXAN HYDROCHLORIDE—ANTIDIURESIS DURING NORMOTENSIVE PHASE

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and
David C. Humphrey, M.D., Cleveland

This report demonstrates the usefulness of two diagnostic procedures in the normotensive phase of pheochromocytoma with paroxysmal hypertension. One of these—approximate assay of the pressor activity of the urine in the rat—has not been described as such, although similar assays in a cat that has been injected with ergotamine have been shown to be of diagnostic value.[1] The other procedure is the demonstration of an antidiuretic effect of piperoxan hydrochloride during the normotensive phase of the disease. This effect of piperoxan had previously been observed only in patients with hypertension due to pheochromocytoma and in normal subjects given pressor doses of epinephrine and arterenol. The question whether the decreased arterial pressure would affect the antidiuresis was unanswered, and we doubted that the test would be useful in the normotensive phase of pheochromocytoma.[2]

## Report of a Case

A 22-year-old man had been medically discharged from the U. S. Army Hospital, Fort Jackson, S. C., with the diagnosis of pheochromocytoma. The diagnosis had been made clinically from his complaints of episodes of palpitation, sweating, weakness, headache, and increased salivation three to four times weekly for more than one year, the association of these attacks with hypertension, and tests with phentolamine methanesulfonate and histamine. The patient was admitted to the Cleveland Clinic Hospital for further observation and for removal of the suspected tumor. During his six preoperative hospital days he was usually normotensive, with his blood pressure only occasionally going up to 150 mm. Hg systolic and 100 diastolic. His basal metabolic rate was −11%, and the serum cholesterol level was 268 mg. per 100 ml. Other routine laboratory studies were within normal limits.

*Histamine Tests.*—The patient was given 0.025 mg. of histamine intravenously on three occasions preoperatively and twice after removal (by Dr. Eugene Poutasse) of a benign pheochromocytoma from the right adrenal. Results of the tests are summarized in table 1. Urine was collected for pressor assay during the two hours before and after histamine injection at the last preoperative and the first postoperative test.

TABLE 1.—*Rise in Blood Pressure After Intravenous Administration of Histamine in Patient with Benign Pheochromocytoma*

| Date | Blood Pressure, Mm. Hg | |
|---|---|---|
| | Control | Rise |
| Preoperative | | |
| Sept. 10 | 130/84 | 80/36* |
| Sept. 11 | 120/80 | 80/40† |
| Sept. 12 | 140/80 | 110/90 |
| Postoperative | | |
| Sept. 20 | 130/80 | 5/10 |
| Nov. 19 | 120/76 | 12/20 |

* After administration of phentolamine, blood pressure went from 200/120 to 132/80 mm. Hg.
† After administration of piperoxan, blood pressure went from 200/120 to 152/48 mm. Hg.

*Piperoxan-Diuresis Tests.*—Piperoxan-diuresis tests were done twice preoperatively and once after operation. The results are summarized in table 2. The noteworthy feature of the second preoperative test is that a positive (antidiuretic) result (volume of urine collection 3 less than that of collection 2; that is, the ratio of the volume of collection 2 to

From the Research Division and the Division of Medicine of the Cleveland Clinic Foundation and the Frank E. Bunts Educational Institute.

collection 3 was greater than 1) was observed during normotension, with no noteworthy changes in arterial pressure occurring after the drug had been given. Blood pressure values were not recorded during the first test.

### Urine Assay

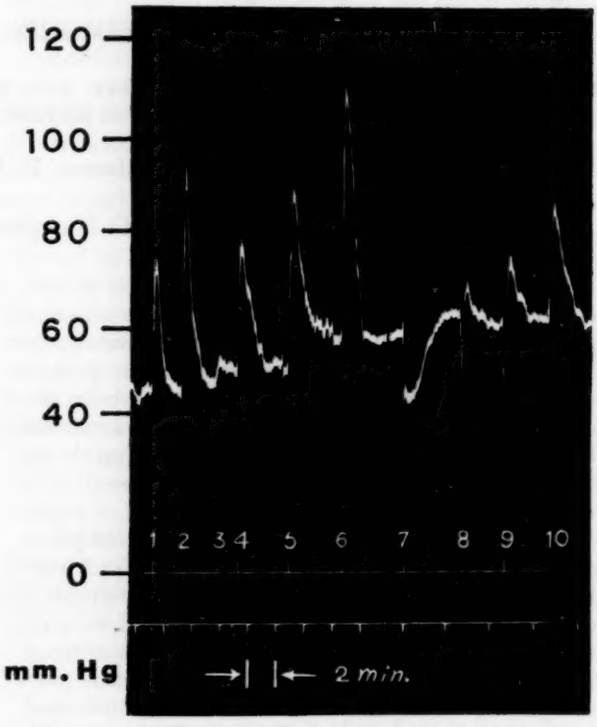
The urine test is based on comparison of the pressor responses of an anesthetized, pentolinium-treated rat to epinephrine and to urine, injected intravenously. The rats, weighing from 150 to 200 Gm., are anesthetized with 9 mg. per 100 Gm. of body weight of amobarbital sodium and injected with about 2 mg. of a 4% solution of pentolinium hydrochloride in a 20% solution of povidone (polyvinylpyrrolidone). If the test indicates the presence of significant amounts of pressor material in the urine, phenoxybenzamine (Dibenzyline) hydrochloride is given and the tests repeated with the aim of demonstrating suppression or reversal of pressor responses due to epinephrine and arterenol. Pentolinium is given as a means of stabilizing the blood pressure of the anesthetized rat and because ganglion block in the rat, as in other species,[3] increases pressor responsiveness. Most test animals yield pressor responses of from 10 to 30 mm. Hg to 0.01 mcg. of epinephrine. With 0.2 ml. of urine as the test sample, a corresponding response would be equivalent to excretion of about 75 mcg. of epinephrine per 24 hours. The test is, therefore, sufficiently sensitive to detect the amounts of pressor amine excreted by most patients with pheochromocytoma, which may range from 600 to 2,700 mcg. per 24 hours, but should not detect the amounts excreted by normal persons, namely, 14 to 41 mg. per 24 hours.[2]

The rat is anesthetized, injected with pentolinium, and then prepared by tracheal intubation, insertion of small-bore polyethylene tubing into one femoral vein, and cannulation of a carotid artery with a blunted 20-gauge needle. The venous tubing is used for the intravenous injections and is kept filled with 0.9% sodium chloride solution. The arterial cannula is connected through polyethylene tubing (3 to 4 mm. internal diameter) to the side-arm of a U-tube mercury manometer, this system being filled with 0.8% heparinized solution of sodium chloride from a small pressure bottle. The manometer is made so that the arm having the side-tube is of about 7 mm. internal diameter, while the other arm, which contains the float and kymographic pen, is of about 2 mm. internal diameter. This construction facilitates registration of arterial pulsations on the paper kymograph.

The standard is freshly prepared by dilution of epinephrine in 0.9% sodium chloride solution so that 0.1 ml. will contain 0.04 or 0.05 mcg. of the base. A few milligrams of ascorbic acid are added to each 10 ml. of standard solution. The fluid volume of each injection is kept constant at 0.2 ml. by dilution with 0.9% sodium chloride solution as required, and the venous tubing is washed with 0.1 ml. of this solution after each injection. Successive test doses of 0.05 and 0.1 ml. of the standard will establish the sensitivity of the preparation (see figure 1, points 1 and 2). Urine is then injected in volumes of 0.05 and 0.1 or even 0.2 ml. (see figure, points 4, 5, and 6). At intervals, 0.2 ml. of the saline solution is injected as a control on the effect of volume (see figure, point 3) and, if desired, similar volumes of normal urine can be injected as a further control. If the urine has a pressor effect, phenoxybenzamine is given (3 mg. intravenously) and the tests repeated as before (see figure, points 7, 8, and

TABLE 2.—*Preoperative and Postoperative Changes of Blood Pressure and Urine Volume in Response to Piperoxan in Patient with Pheochromocytoma*

| Date | Blood Pressure, Mm. Hg | | Vol. of Urine, Ml. | | |
|---|---|---|---|---|---|
| | Before Administration | After Administration | Before Administration (Collection 2) | After Administration (Collection 3) | Ratio of Vol. of Collections 2 and 3 |
| Preoperative | | | | | |
| Sept. 11 ..... | ... | ... | 256 | 90 | 2.7 |
| Sept. 13 ..... | 120/75 | 130/100<br>140/105<br>120/80 | 170 | 55 | 3.1 |
| Postoperative | | | | | |
| Sept. 19 ..... | 120/80 | 120/80 | 45 | 115 | 0.4 |




Pressor responses in rat injected with epinephrine and with urine from patient with pheochromocytoma (corresponds to assay 1, table 3). 1, Epinephrine 0.02 mcg.; 2, epinephrine 0.04 mcg.; 3, 0.2 ml. 0.9% sodium chloride solution; 4, 0.05 ml. urine collected before histamine injection; 5, 0.1 ml. urine collected before histamine injection; 6, 0.05 ml. urine collected after histamine injection; 7, 3 mg. phenoxybenzamine; 8 and 9, urine injections corresponding to 4 and 6 above; 10, angiotonin.

9). The responsiveness of the preparation may be verified also by injection of angiotonin before the epinephrine tests and again after injection of phenoxybenzamine (see figure, point 10), equal responses demonstrating that the changes in response, after phenoxybenzamine injection, are specific.

The results of the tests done in this case are summarized in table 3. Assays were done on three occasions, once preoperatively and twice after operation, with urine collected before and after the preoperative (Sept. 12) and the postoperative (Sept. 20) histamine tests. The urine specimens were preserved by acidification to pH 3 with glacial acetic acid and refrigeration at 4 C. The assays of preoperative urine indicate the excretion of about 500 mcg. of epinephrine-equivalent per liter of urine before and about twice as much after histamine was given and an attack induced (see figure, points 4 and 6). The postoperative prehistamine and posthistamine samples gave almost identical responses

TABLE 3.—*Results of Pressor Assay* of Urine of Patient with Pheochromocytoma by Injection into a Rat*

| | Assay 1 | | Assay 2 | | Assay 3 | |
|---|---|---|---|---|---|---|
| Substance Injected | Dose | Response, Mm. Hg | Dose | Response, Mm. Hg | Dose | Response, Mm. Hg |
| Epinephrine | 0.025 mcg. | 22 | 0.02 mcg. | 15 | 0.02 mcg. | 20 |
| | 0.05 mcg. | 36 | 0.04 mcg. | 21 | 0.04 mcg. | 26 |
| | | | 0.08 mcg. | 28 | | |
| Urine, preoperative | | | | | | |
| Before histamine injection | 0.05 ml. | 20 | 0.05 ml. | 15 | 0.05 ml. | 20 |
| | 0.1 ml. | 29 | | | | |
| After histamine injection | 0.05 ml. | 41 | 0.05 ml. | 27 | 0.05 ml. | 32 |
| Urine, postoperative | | | | | | |
| Before histamine injection | | | 0.05 ml. | 10 | 0.05 ml. | −2 |
| After histamine injection | | | 0.05 ml. | 8 | 0.05 ml. | −3 |

* Assays on three rats. Assay 1 was made before operation and assays 2 and 3 on different days after operation.

which were slightly pressor in assay 2 and depressor in assay 3. The indicated preoperative output of pressor material corresponds to about 750 mcg. of epinephrine-equivalent per 24 hours. Similar high excretions of catechol amines were observed by Goldenberg and associates [4] in three patients with paroxysmal hypertension who were normotensive and free of attacks during the period of urine collection. These observations raise interesting questions as to the mechanisms which may maintain normotension in patients who are evidently circulating large amounts of pressor amine. That the circulating catechols were exerting at least a renal pharmacological effect was indicated by the antidiuretic response to piperoxan in the preoperative tests. The absence of hypertension is, therefore, more probably due to vasomotor adaptation than to a circulating antiadrenergic agent.

The method, as described, is an approximate assay only and gives no indication as to the partition of the urinary pressor amines between epinephrine and arterenol, except as pressor responses to the latter can be shown to be more persistent after phenoxybenzamine has been given than those to epinephrine, which are usually reversed. It has proved reliable in excluding the diagnosis of pheochromocytoma in seven patients with arterial hypertension due to other causes, and it has helped in confirming the diagnosis of pheochromocytoma in two patients. It seems to us to be a practical diagnostic procedure which is definitely more convenient than the attempt to make occasional assays of urine by presently available chemical methods.

## Summary

A patient with paroxysmal hypertension due to functioning pheochromocytoma during the normotensive phase showed an antidiuretic response to intravenously injected piperoxan, i.e., a positive piperoxan-diuresis test, with only a small, transient increase in blood pressure after the injection. Assay of urine collected during a normotensive phase indicated an output of epinephrine-equivalent of about 750 mcg. per 24 hours. The procedure of urine assay by injecting urine into the rat was used. The test was performed in an anesthetized, pentolinium-treated rat and the specificity of pressor responses tested by injection of phenoxybenzamine (Dibenzyline). The limiting sensitivity of the test is such that the output of pressor amine in the urine of most patients with functioning pheochromocytoma can be estimated, but not that of normal persons. In this patient, the test demonstrated that the rise in blood pressure provoked by histamine injection was associated with a doubled output of urinary epinephrine-equivalent. Postoperatively, neither prehistamine nor posthistamine urine samples caused significantly pressor responses.

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This investigation was supported in part by a grant from the National Heart Institute, National Institutes of Health.

### References

1. Von Euler, U. S.: Noradrenalin: Chemistry, Physiology, Pharmacology and Clinical Aspects, Publication 261, American Lecture Series, Monograph in Bannerston Division of American Lectures in Physiology, Springfield, Ill., Charles C Thomas, Publisher, 1956, p. 167.

2. Leiser, A. E., and Corcoran, A. C.: Antidiuretic Response to Piperoxan as Diagnostic Test of Pheochromocytoma, J. A. M. A. **162**:540-544 (Oct. 6) 1956.

3. Page, I. H., and Taylor, R. D.: Augmentation of Vasoactive Substances by Tetraethylammonium Chloride, Circulation **1**:1233-1245 (June) 1950.

4. Goldenberg, M.: Chemical Screening Methods for the Diagnosis of Pheochromocytoma, in Hypertension, Humoral and Neurogenic Factors, Ciba Foundation Symposium, Boston, Little, Brown & Company, 1954. Goldenberg, M.; Serline, I.; Edwards, T.; and Rapport, M. M.: Chemical Screening Methods for Diagnosis of Pheochromocytoma: Nor-epinephrine and Epinephrine in Human Urine, Am. J. Med. **16**:310-327 (March) 1954.

# ACUTE LEUKEMIA AFTER RADIOACTIVE IODINE ($I^{131}$) THERAPY FOR HYPERTHYROIDISM

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Pochin, Myant, and Corbett [1] have reported the occurrence of acute leukemia in a patient given radioactive iodine ($I^{131}$) therapy for hyperthyroidism. Onset was 18 to 24 months after the administration of a total of 7.1 mc. of the isotope. From calculations of the radiation doses provided to various sites in the body by this therapy, Pochin and co-workers concluded that the association of leukemia with $I^{131}$ treatment was most likely a coincidence and a manifestation of the spontaneous incidence of that disease in the population at large. The onset of acute leukemia in a patient of our own series [2] of hyperthyroid patients treated with $I^{131}$, also 18 months after $I^{131}$ was administered, reopens the question whether such an association may not be more than chance.

## Report of a Case

A 28-year-old woman was referred to the thyroid clinic of the Presbyterian Hospital, Jan. 25, 1955, for treatment of recurrent hyperthyroidism of about one and one-half years' duration. Family history, personal history, and previous health information were essentially irrelevant. Her average and present weights were 172 lb. (78 kg.). The present illness began in 1941, with a subtotal thyroidectomy for typical toxic goiter which was performed at another hospital. Prior to operation, there were mild eye signs and the basal metabolic rate was +56%. Although she was not definitely improved postoperatively, no treatment was considered necessary until one and one-half years before admission to the clinic here. Then, she was given methimazole for six months with relief of symptoms. However, therapy was stopped when a low white blood cell count was discovered. Since then, there has been some nervousness and an intermittent pain in the left side of the chest anteriorly, but few other complaints. Her basal metabolic rate was said to be +36% shortly before her arrival here. Her weight was constant throughout at 172 lb.

On physical examination, she was a slightly tense, moderately overweight woman with cool, dry palms. The pulse rate was 88 and the blood pressure 140/80 mm. Hg. The thyroid was palpable beneath the neck scar and approximated 2 by 1 by 0.5 cm. on either side. The rest of the examination was nonrevealing.

In the laboratory, complete blood cell count and urine and blood Mazzini tests were normal. Sedimentation rate was 28 mm. at one hour (Westergren). Basal metabolic rates were +25% and +39%, but the spirograms were poor. Other values were as follows: fasting cholesterol, 252 mg. per 100 cc.; 24-hour $I^{131}$ uptake, 51% before and 55% after 150 mcg. of sodium liothyronine (L-trioiodothyronine) was given daily for eight days; an electrocardiogram was negative except for premature ventricular contractions; x-ray of the chest was negative.

A diagnosis of toxic recurrent goiter was made and since the hyperthyroidism was recurrent after surgery, $I^{131}$ therapy was advised. A psychiatrist advised that the patient was in need of psychotherapy for emotional instability, but the suggestion was not pursued. The doses of $I^{131}$ used diagnostically and therapeutically are listed in the table and total 2.1 mc. The weekly doses of 1.5 μc given prior to the therapeutic doses were administered for investigative purposes. The treatment doses were given in divided amounts in an effort to avoid the consequences of possible undue sensitivity to radiation effect.[3] The radiation doses resulting from the 2.1 mc. of $I^{131}$ administered approximated between 1 and 3 rads of general body exposure and between 2 and 6 rads to the blood.

The patient reported regularly for the first 4 months after her therapy but then stayed away for 14 months. At this time she returned with a complaint of three weeks of fatigue, headache, pounding in the left ear, and menorrhagia. A blood cell count by her family physician was said to have been normal two months before her arrival at the clinic. The rest of the history was uninformative except for the use of benzine in a cleaning fluid three weeks prior to admission. The physical examination, except for pallor of the face, nail beds, and mucosal surfaces, was essentially noncontributory.

*Diagnostic and Therapeutic Doses of $I^{131}$ Received by Patient for Therapy of Hyperthyroidism*

| Date, 1955 | Dose, μc | 24-Hr. $I^{131}$ Uptake, % |
|---|---|---|
| 2-7 | 15.0 | 51 |
| 3-9 | 15.0 | 55 |
| 3-24 | 1.5 | 73 |
| 3-31 | 1.5 | 52 |
| 4-6 | 1.5 | 51 |
| 4-14 | 1.5 | 64 |
| 6-9 | 552.0 | 53 |
| 6-16 | 551.0 | 40 |
| 6-23 | 966.0 | 35 |
| | 2,105.0 | |

On admission to the hospital, laboratory studies revealed a hemoglobin level of 4.5 Gm. per 100 cc.; 1,440,000 red blood cells per cubic millimeter, with 1.7% reticulocytes; and 3,400 white blood cells per cubic millimeter, with 66% lymphocytes, 25% blast cells, 7% polymorphonuclear neutrophils, 1% monocytes, and 1% eosinophils. There was 1 nucleated red blood cell per 100 white blood cells, and there were 46,000 platelets per cubic millimeter. The sedimentation rate was 108 mm. per hour by the Westergren method.

An iliac crest marrow biopsy revealed normoblastic erythropoiesis; granulopoiesis consisted mainly of immature cells with some granulation suggesting a myeloblastic process. There were 65% blast cells, 13% lymphocytes, 12% normoblast cells, and 10% premyelocytes and myelocytes. Tentative diagnosis was acute leukemia, probably granulocytic.

## Comment

The spontaneous incidence of acute leukemia in the population at large has been estimated to be about 1 per 20,000 persons per year.[4] It has been estimated by some that the spontaneous rate is doubled by general body exposure, i. e., to a radiation dose to the "whole red marrow of the body," of between 30 and 50 r.[5] Such dosage levels may be

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provided in $I^{131}$ therapy of thyroid cancer when required, as a calculated risk in the treatment of cancer. As was anticipated, leukemia has developed in some of these patients.[6]

In hyperthyroidism, however, the dosages of $I^{131}$ usually employed provide general body exposure well below the doubling dose of 30 to 50 r. In Pochin, Myant, and Corbett's [1] carefully studied patient, radiation doses were calculated. General body exposure was about 7 rads. In our own patient, general body exposure was of the order of 1 to 3 rads. From this point of view, it seems unlikely that the $I^{131}$ therapy induced the leukemia. However, Court-Brown [5] has postulated that the leukemogenic effect of the radiation is proportional to the dose; the incidence of leukemia with 5 r exposure, then, for example, would be increased by 10%.

The conclusion that the association of leukemia and $I^{131}$ therapy is no more than a chance one is supported by the results of the 10-year experience with $I^{131}$ therapy in hyperthyroidism, presented at the recent Atomic Energy Commission–sponsored conference on the subject.[7] The histories of 13,000 patients (from several clinics) who were followed for from 1 to 10 years after $I^{131}$ therapy were available for review, i. e., an experience of 65,000 patient-years. Four cases of acute leukemia appeared after treatment (including Pochin's), or 1 per 16,000 patients per year. This is in close agreement with the expected incidence, 1 per 20,000 per year. However, if our own patient is included, whose diagnosis became manifest shortly after the conference, the incidence becomes 5 in 65,000 patient-years or 1 per 13,000 per year. Assuming all patients are known, the numbers involved are still too small to assume statistical significance concerning the possibility of an increase over chance association.

The onset of the leukemia occurred at almost the same interval after $I^{131}$ therapy as in Pochin's patient. His patient developed symptoms 18 months after $I^{131}$ therapy and was given a definite diagnosis at 24 months. Again, this similarity is probably a chance one and is somewhat early for radiation-induced leukemia.[4] Also, both Pochin's patient and ours received antithyroid drugs, as do many patients receiving $I^{131}$ for hyperthyroidism. The question has been raised by Failla [8] whether possibly these agents could be mutagenic, with the leukemia from this source alone, or in conjunction with radiation effect. As Pochin and co-workers have suggested, it becomes important that all occurrences of leukemia in patients receiving $I^{131}$ therapy be recorded in detail in order to establish whether the association of leukemia and $I^{131}$ treatment is more than a chance one.

Mechanisms by which the relatively low radiation exposures provided by $I^{131}$ therapy in hyperthyroidism might induce leukemia are not evident. Extremes of sensitivity to radiation effect undoubtedly exist and it may be this factor which would permit the development of leukemia with low doses of $I^{131}$. This is unlikely. Specific concentrations of $I^{131}$ in susceptible tissues have been demonstrated in only a few sites and these are not assumed to precipitate leukemia.[9] However, thyroxine is known to concentrate in liver and probably recirculates in an enterohepatic circulation. If the thyroxine has been labeled by the $I^{131}$ in the thyroid, release of this hormone possibly would subject the reticuloendothelial system of this area to higher radiation doses than other areas of the body. There has been no clear demonstration that lymphoid tissues may selectively accumulate $I^{131}$ or thyroxine labeled with $I^{131}$. This aspect of the problem would be of interest upon proof of an increased incidence of leukemia after $I^{131}$ therapy.

## Summary

A patient receiving 2.1 mc. of radioactive iodine ($I^{131}$) in the therapy of hyperthyroidism developed acute granulocytic leukemia 18 months later. There have been 5 cases of acute leukemia which appeared after treatment, or an incidence of 1 per 13,000 per year. Mechanisms by which the relatively low radiation exposures provided by $I^{131}$ therapy in hyperthyroidism might induce leukemia are not evident. The conclusion that the association of leukemia and $I^{131}$ therapy is no more than a chance one is supported by the results of 10 years' experience.

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### References

1. Pochin, E. E.; Myant, N. B.; and Corbett, B. D.: Leukemia Following Radioiodine Treatment of Hyperthryoidism, Brit. J. Radiol. **29**:31-35 (Jan.) 1956.

2. Werner, S. C.; Coelho, B.; Quimby, E. H.; and Day, R. McC.: Ten Year Results of $I^{131}$ Therapy of Hyperthyroidism, Bull. New York Acad. Med. **33**:783:806 (Nov.) 1957.

3. Thyroid: Fundamental and Clinical Text, edited by S. C. Werner, New York, Paul B. Hoeber, Inc., 1955.

4. Medical Research Council: Hazards to Man of Nuclear and Allied Radiation, London, Her Majesty's Stationery Office, 1956.

5. Court-Brown, W. M.: Epidemiological Survey of Incidence of Leukemic and Aplastic Anemia in Therapeutically Irradiated Human Population, read before sixth International Congress on Hematology, Boston, Aug. 27, 1956.

6. Seidlin, S. M.; Siegel, E.; Malamed, S.; and Yalow, A. A.: Occurrence of Myeloid Leukemia in Patients with Metastatic Thyroid Carcinoma Following Prolonged Massive Radioiodine Therapy, Bull. New York Acad. Med. **31**:410 (May) 1955. Delarue, J.; Tubiana, M.; and Dutreix, J.: Cancer de la thyroïde traite par l'iode radioactive, Bull. Cancer **40**:263, 1953. Blom, P. S.; Querido, A.; and Leeksma, C. H.: Acute Leukemia Following X-Ray and Radioiodine Treatment of Thyroid Carcinoma, Brit. J. Radiol. **28**:165-166 (March) 1955.

7. A. E. C.-Sponsored Conference on 10 Years of $I^{131}$ Therapy, Argonne Hospital and University of Chicago, Nov. 8 and 9, 1956.

8. Failla, G.: Personal communication to the authors.

9. Marinelli, L. D., and Hill, R. F.: Radiation Dosimetry in Treatment of Functional Thyroid Carcinoma with $I^{131}$, Radiology **55**:494-502 (Oct.) 1950.

# METHYLPREDNISOLONE (MEDROL), A POTENT NEW ANTI-INFLAMMATORY STEROID

## THERAPEUTIC RESULTS IN ALLERGIC DISEASES

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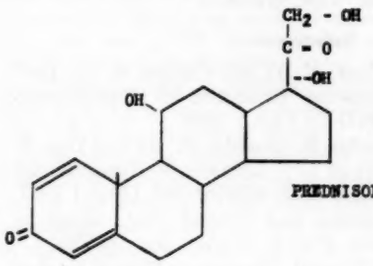
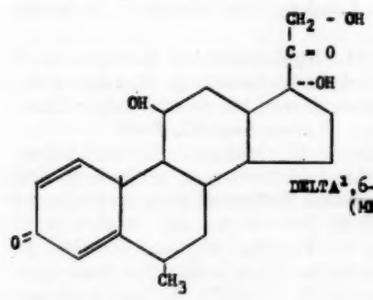
The usefulness of the steroids, such as cortisone, hydrocortisone, prednisone, and prednisolone, in the treatment of intractable asthma and other severe allergies has been definitely established. The use of these steroid hormones is limited because of their tendency to produce undesirable effects such as disturbances in mineral balance, spread of inflammatory lesions (tuberculosis and peptic ulcer), hyperglycemia, overstimulation, muscle cramps, hirsutism, moon face, and excessive appetite. These considerations and others have occasioned a continual search for anti-inflammatory steroids having less objectionable characteristics.

In the search for new steroids, a compound has been synthesized which, from the results of animal experiments, appeared to offer some advantages. This steroid is methylprednisolone (Medrol) and differs from prednisolone only in the substitution of a methyl group for a hydrogen atom at the 6 alpha position. The following are the chemical formulas of prednisolone and methylprednisolone.




PREDNISOLONE




DELTA$^1$,6-METHYL HYDROCORTISONE (MEDROL)

Some of the major laboratory findings with methylprednisolone are as follows [1]: Its glucocorticoid activity as determined by glycogen formation in the liver of the rat was found to be more than three times that of prednisolone. In the test for inhibition of inflammatory exudation in the granuloma pouch in the rat, methylprednisolone was 2.4 times more potent than prednisolone in its action.

*Inhibitory Effect of Steroid Hormones on Asthma Induced in Guinea Pigs*

| | Animals, No. | Dose of Steroid, Mg./Kg. | Time Required to Produce Asthma, Sec. From Antigen | Time Required to Produce Asthma, Sec. From Histamine |
|---|---|---|---|---|
| Methylprednisolone | 3 | 125 | 563 | 72 |
| | 3 | 125 | 574 | 61 |
| | 3 | 62.5 | 342 | 62 |
| Compound X | 3 | 125 | 462 | 62 |
| | 3 | 125 | 557 | 97 |
| | 3 | 62.5 | 347 | 62 |
| Prednisone | 3 | 125 | 285 | 55 |
| | 3 | 62.5 | 157 | 62 |

Tests on adrenalectomized salt-loaded and water-loaded rats indicate that there is no water or sodium retention but that the steroid acts rather as a diuretic or sodium-removing agent.

We felt that the prevention of acute asthma induced in guinea pigs might give a method of assay of this and other steroids of more significance to the problem of human asthma and other allergic conditions. The method of evaluating the inhibition of acute antigen-antibody reaction in guinea pigs, previously described by us,[2] was employed. The animals were passively sensitized with a pooled antiserum obtained from a number of guinea pigs which had been actively sensitized to crystalline ovalbumin. Such animals, when exposed to an aerosol of ovalbumin released in a chamber under established conditions of concentration and pressure, develop severe asthma in two minutes or less. An inhibitory effect is evident when the onset of asthma is delayed. Protected animals are kept in the chamber for a maximum of 600 seconds, since our experience indicates that if the animal can tolerate an exposure to the aerosol for 10 minutes, it can do so indefinitely. The duration of exposure is recorded, and a value of 600 seconds indicates complete protection.

Three groups of animals, six to nine in each series, were injected with one of three hormones 18 hours prior to aerosol challenge. The table shows the

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amounts of steroid injected and the average number of seconds (no protection is shown by less than 120, and complete protection is shown by 600 seconds) of exposure required to produce asthma. In addition to exposure to an antigen aerosol, these animals were also exposed to histamine. It is evident that the steroids produced no protection against histamine-induced asthma. Against the antigen-antibody reaction, methylprednisolone appears to be two or more times as effective as prednisone and of about equal potency to another experimental anti-inflammatory hormone.

Methylprednisolone was administered to a group of patients who had intractable asthma or other severe allergic manifestations and who did not respond to the usual management. Most of the patients with asthma were those having persistent symptoms on an all-year-round basis, having no obvious extrinsic factors, and ordinarily classified as "intrinsic." Some cases were of the long season variety due to mold allergy. A few were due to ragweed pollen. These are also designated as hay fever cases. Chronic or long-term seasonal asthma was present in 40 patients, seasonal asthma and hay fever in 5, seasonal hay fever alone in 6, atopic dermatitis in 5, and allergic cough in two. The doses were given orally, usually three times daily in the beginning of treatment, and later twice daily. The maintenance dosage was regarded as the minimum daily quantity of drug required to suppress all but minor symptoms. The dosage required in each patient was compared with the maintenance dosage of prednisone. Since many of the patients had been previously on steroid therapy, such a comparison was possible in a large proportion of the group. In many instances the change of steroids was made more than once. Side-effects were also noted and compared. The duration of treatment with methylprednisolone varied from 1 to 22 weeks.

## Results

*Therapeutic Results.*—The initial dose required to produce an effect in one or two days was difficult to determine from our trials, because in most instances the patients were shifted from prednisone to methylprednisolone therapy. Our general impression is that the starting effective dose is comparable to or somewhat smaller than that of prednisone. The maintenance dosage was determined much more accurately. It is true that this was less reliable in the strictly seasonal cases and particularly in the short-term therapy during the ragweed season. The majority of our patients, however, were chronic asthmatics, having continuous symptoms when not on steroid treatment, and this enabled us to evaluate maintenance dosages under much less variable conditions and for a longer time. Thirty-eight patients were treated both with prednisone and methylprednisolone on a basis where the maintenance dosages could be adequately compared. The average dose of prednisone in these patients was 10.3 mg., while the average dose of methylprednisolone was 9.5 mg., ranging from 5 to 17.5 mg. for both drugs. In 17 additional patients in whom the maintenance dosage of prednisone was not established, the average dose of methylprednisolone was 7.5 mg., with a range to 2 to 20 mg. Our previous experience with prednisone and prednisolone did not indicate any significant difference between the results from these two drugs. It would seem, therefore, that, in the types of cases studied, methylprednisolone shows about the same or somewhat greater activity.

*Side-actions.*—Moon face was obvious in 8 of the 56 patients on both prednisone and methylprednisolone therapy. One patient who had developed glycosuria and hyperglycemia on cortisone and prednisone therapy continued to show the same findings on methylprednisolone. Six patients who had muscle cramps while under the prednisone therapy also had them on treatment with methylprednisolone. Two additional patients who had not had prednisone also had muscle cramps from methylprednisolone. Two patients had gastric irritation on both prednisone and methylprednisolone therapy. Nervousness, headache, dizziness, or weakness constituted complaints of two patients on methylprednisolone therapy who had not had prednisone. Of another two patients who had both drugs, such symptoms were produced by methylprednisolone in one and prednisone in the other.

There were some suggestive differences in some respects between these two drugs. Methylprednisolone did not show the tendency to cause weight gain as experienced frequently with prednisone. Part of this was due undoubtedly to the lesser appetite-stimulating properties of methylprednisolone. In other cases the stopping of gain in weight or the rapid temporary loss of weight could be explained only on the basis of loss of fluids.

## Comment

It would seem, therefore, that in asthma and other allergies methylprednisolone has about the same or perhaps slightly higher potency than prednisone or prednisolone. As previously stated, the anti-inflammatory effect in rats showed methylprednisolone to possess two or three times the potency of prednisolone. Our study of the effect of this hormone on asthma produced by an aerosol of the antigen in sensitized guinea pigs indicated that methylprednisolone was considerably more potent than prednisone. It is possible that the discrepancy in the potency in animal tests and clinical use is due to the difference in action between the prevention of an

acute allergic reaction and the maintenance of the prolonged changes necessary to correct such a condition as asthma in humans. It is also possible that the action of these drugs in man may differ in various manifestations. One of our patients with severe asthma also had a moderate arthritis of the hands. The maintenance dosage relieving the asthma was the same for methylprednisolone as for prednisone. However, it took twice as much prednisone as methylprednisolone to relieve the joint symptoms. It appears reasonable to assume that neither of such experimental approaches in assaying anti-inflammatory hormones can be trusted to forecast their relative potency in clinical allergic conditions.

The mechanism of the muscle cramps produced by these steroids has not been determined. Since both prednisone and methylprednisolone possess this characteristic to a greater degree than cortisone, it is suspected that this might be the result of intracellular sodium loss. Thus far, however, our experience indicates that neither supplementary sodium, potassium, or calcium intake has had any effect on this manifestation.

## Summary

Methylprednisolone (Medrol) was administered to 56 patients with asthma, hay fever, and dermatitis for a period of 1 to 22 weeks. The maintenance dosage of this drug was about the same or slightly lower than that of prednisone. Both drugs were about equal in their tendency to produce moon face, gastric irritation, hyperglycemia, and muscle cramps. Methylprednisolone had less tendency to stimulate excessive appetite. It also appeared to produce loss of fluids accumulated from therapy with other steroids. The relative potency of the steroid hormones in asthma and other allergic conditions cannot be adequately evaluated by anti-inflammatory studies in rats or by the inhibition of asthma in guinea pigs.

185 N. Wabash Ave. (Dr. S. M. Feinberg).

This investigation was supported by a research grant from the Division of Research Grants of the National Institutes of Health, United States Public Health Service.

The methylprednisolone (Medrol) used in this study was supplied by the Upjohn Company, Kalamazoo, Mich.

### References

1. Lyster, S. C., and others: Adrenal Corticoid Activities of 6-Methyl-$\Delta^1$-hydrocortisone, Proc. Soc. Exp. Biol. & Med. **94**:159-162 (Jan.) 1957.

2. Feinberg, S. M.; Malkiel, S.; and McIntire, F. C.: The Effect of Stress Factors on Asthma Induced in Guinea Pigs by Aerosolized Antigens, J. Allergy **24**:302-308 (July) 1953.

**William Harvey.**—Among Harvey's many benefactions to the Royal College of Physicians of London was a sum of money to endow an annual oration. This was to consist of "a commemoration of all the benefactors of the said College, with an exhortation to the Fellows and Members to search and study out the secrets of Nature by way of experiment." The first oration was delivered in 1656, a year before Harvey's death, and there have been many memorable orations right up to the present time. They were given in Latin until the year 1865. . . . Two years ago I made various pilgrimages in pursuit of Harvey—to his birthplace at Folkestone, his school at Canterbury, Caius College at Cambridge, and in London, St. Bartholomew's Hospital and the Royal College of Physicians—though Harvey would scarcely recognize any of these scenes today—also to Oxford, where, in the last stages of the Civil War, he continued his studies in embryology, using the eggs of a hen which his friend George Bathurst obligingly accommodated in his rooms, and finally to Harvey's last resting place in the little village church of Hempstead in Essex. How vastly the British scene of Harvey's labors has changed. Abroad, he seems more clearly to fit the picture, especially in Padua where, though the city is sadly scarred by bombing, one may still see the anatomical theatre where Harvey followed the demonstrations of Fabricus, and the pulpit used by Galileo, who did for science what Harvey did for medicine, replacing vague argument by accurate measurement. During the 25 odd years afters his return from Padua, Harvey was busily engaged in London—as Physician to St. Bartholomew's Hospital and in private practice, as Physician to the King, and as Lecturer to the College of Physicians. This period culminated in the publication of his book in 1628. In 1630 he was chosen to accompany a wealthy young nobleman, the Duke of Lennox, on a grand tour of France and Spain. It was hoped to include Italy, but that part of the tour was canceled because of plague. Of this tour there exists only the scanty detail contained in a letter from Harvey to Lord Dorchester. He writes from Spain, "We could scarce see a dog, crow, or anything to anatomise."—D. Guthrie, M.D., The Adventures of William Harvey, and of His Discovery, *International Record of Medicine*, June, 1957.

# A CASE OF METHYL SALICYLATE INTOXICATION TREATED BY EXCHANGE TRANSFUSION

Julius T. Adams, M.D., John A. Bigler, M.D., Chicago
and
Orville C. Green, M.D., Evanston, Ill.

Oil of wintergreen or methyl salicylate is one of the most poisonous and toxic substances, which fact many physicians fail to recognize. A review of the statistics at Children's Memorial Hospital, Chicago, substantiates the fact that methyl salicylate is extremely toxic, even more than either acetylsalicylic acid or sodium salicylate.

From January, 1950, through December, 1956, there were 72 persons with salicylism admitted to this hospital. Sixty-nine of the cases were due to aspirin or sodium salicylate; there was one death. The remaining three cases, with two deaths, were due to methyl salicylate. One case was that of a 3-year-old child who had ingested 2 to 3 tsp. of oil of wintergreen the day prior to admission. The parents brought the child to the hospital eight hours after the ingestion and seven hours after she had started vomiting. She died 65 minutes after her arrival at the hospital. The second case was that of a 2-year-old child who ate an unknown number of tablets containing methyl salicylate and colchicine. On admission her blood salicylate level was 72.7 mg. per 100 cc.; the following day, after the administration of fluids intravenously and blood transfusions and routine care, it was 33.7 mg. per 100 cc. The child died six days after the ingestion of the tablets, which was five days after hospital admission. The third case is presented below.

Generally speaking, the patients in these cases are all seen very late after they have ingested the intoxicant. The results of the treatment we have used in the cases of salicylism due to aspirin or sodium salicylate have been excellent; but the results in those cases of salicylism due to methyl salicylate have been extremely poor. Therefore, it is felt a more drastic and lifesaving procedure should be instituted for the management of salicylism caused by methyl salicylate. The case below is presented as a possible future management of methyl salicylate poisoning cases which are seen several hours after the patient has ingested the intoxicant.

## Report of a Case

A 20-month-old male was first seen at Children's Memorial Hospital at 8 a. m. Nov. 13, 1956. The history given by the parents was that the boy had ingested an unknown amount of oil of wintergreen. It was estimated from the discussion with the parents that he had consumed approximately 5 ml. This had occurred at approximately 10 a. m. Nov. 12, 1956, or 22 hours prior to his being seen at the hospital.

At home, upon the advice of the family physician, the child had been given warm salt water to induce vomiting and a cathartic consisting of two doses of mineral oil. The child did vomit once sometime after the ingestion of the methyl salicylate. He seemed perfectly well except that he was unable to retain any fluids or solid foods that afternoon. At 1 a. m. Nov. 13, it was noted by the parents that the boy was breathing rather rapidly. By 5 a. m. he seemed to be "shaking all over," and just prior to his arrival at the hospital the parents were unable to arouse him at all.

The developmental and family histories were not contributory to the case. Physical examination at the time of the patient's admission to the hospital disclosed a well-developed, well-nourished male who was comatose, not cyanotic, with mild twitching of both arms and legs. There were marked pallor and mild diaphoresis. His weight was 13.8 kg. (30 lb. 8 oz.), and his temperature was 102.2 F (39 C) rectally. Examination of the eyes disclosed that the pupils were equal and dilated but reacted very sluggishly to light. The findings in the ears, nose, and throat were negative except for the odor of acetone on the breath and a mildly dry tongue. The respiratory rate was 60 to 64 per minute, and the lung fields were clear. The cardiac rate was 160 per minute, but the rhythm was regular. The tones were only of fair quality. No blood pressure was obtainable. Examination of the abdomen revealed no apparent tenderness. The liver, spleen, and kidneys were not palpably enlarged. The skin was of only fair turgor, and no rash was present. The corneal reflex was present, but the deep tendon reflexes were markedly diminished. No cutaneous reflexes were present.

Immediately after the examination, blood was drawn from the patient for chemical testing and the intravenous administration of fluids was started. The fluids consisted of 5% glucose with 25 mg. of vitamin $K_1$ given at the rate of 75 ml. per minute. One-half grain (30 mg.) of phenobarbital was given intramuscularly. No urine was obtainable at this time for analysis. A diagnosis of methyl salicylate poisoning was made.

After the blood chemistries were reported from the laboratory, the patient was given 1/6 molar sodium lactate intravenously at the rate of 44 to 48 ml. per minute in the right antecubital vein. Whole blood was given intravenously at the rate of 48 ml. per minute in a small vein of the left foot. During the next three hours, the boy was observed and very little improvement was noted. His blood pressure was 80/10 mm. Hg, respirations were still 56 to 58 per minute, and the pulse rate was 170 per minute. The patient still had not urinated since admission. It was then decided that an exchange transfusion be done.

Under sterile technique in surgery, an incision was made in the right inguinal region. The long saphenous vein was isolated and then cannulated with a no. 16 polyethylene tube which was inserted into the femoral vein and as high as the iliac vein on the right side. The patient's condition was considered very poor; he gave no response to any stimuli.

Over a two-hour period the exchange transfusion, with removal each time of 50 ml. of blood and replacement of 50 ml. of blood, was accomplished. The patient received 2 ml. of 10% calcium gluconate intravenously with each replacement of 200 ml. of blood. After 1,200 ml. of blood had been exchanged, the patient's condition remained the same. At that time another blood sample was obtained in order to ascertain the salicylate level. The venous pressure remained at approximately 8 cm. $H_2O$, and a blood deficit of 70 ml. was permitted. A total of 2,105 ml. of blood was finally removed and replaced with 2,035 ml. of blood. The patient

received a total of 22 ml. of the 10% calcium gluconate intravenously. Blood was again obtained for chemical testing at the completion of the exchange.

After the procedure the respirations continued to be rapid, 48 to 50 per minute. However, the patient responded by crying out to any type of motion of his arms, legs, or head. The blood pressure now was 72 mm. Hg systolic and 38 mm. Hg diastolic. The pulse was 150 per minute.

During the next 24 hours, the patient received intravenously 2,000 ml. of fluids, which consisted of 420 ml. of 5% glucose in saline solution, 200 ml. of 1/6 molar sodium lactate, and the remainder 5% glucose in water. He was given 300,000 units of procaine penicillin G daily intramuscularly.

Approximately four and one-half hours after completion of the exchange, the patient began to urinate small amounts and respond more readily. The respirations slowed to 30 to 32 per minute. The next morning, 24 hours after hospital admission, the patient was much more alert, responded to his name, and even took small quantities of fluids by mouth. His blood pressure varied from 88 to 104 mm. Hg systolic and 50 to 36 mm. Hg diastolic. Blood was again drawn on that date, and because of the low serum potassium, he was given intravenously 28 mEq. of potassium chloride in 5% glucose in water. This was administered at the rate of 88 ml. per hour over a six-hour period by the intravenous method. Five milliliters of 10% calcium gluconate was also injected, 1 ml. every 15 minutes.

*Results of Blood Tests Run on Patient During Three-Day Period After Exchange Transfusion*

| Date | Time | Salicylate, Mg./100 Cc. | Carbon Dioxide, MEq./Liter | pH | Nonprotein Nitrogen, Mg./100 Cc. | Glucose, Mg./100 Cc. | Sodium, MEq./Liter | Potassium, MEq./Liter | Chloride, MEq./Liter | Calcium, MEq./Liter | Phosphorus, Mg./100 Cc. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 13 | 8 a.m. | 72.7 | 8.6 | 7.4 | 103.6 | 5.6 | 145.96 | 5.35 | 99.0 | | |
| Nov. 13 | 1:45 p.m. Before the exchange | | | | 106.0 | 112.0 | 149.06 | 4.60 | 100.0 | 6.4 | 6.3 |
| Nov. 13 | 2:30 p.m. After 1,200 cc. exchange | 41.8 | | | | | | | | | |
| Nov. 13 | 2:55 p.m. After 2,035 cc. exchange | 29.8 | 13.5 | 7.57 | 79.0 | 153.0 | 142.26 | 4.23 | 89.5 | 10.4 | |
| Nov. 14 | 8 a.m. | 30.1 | 26.1 | 7.72 | 42.0 | 171.1 | 137.98 | 2.00 | 96.0 | 6.2 | |
| Nov. 15 | 8 a.m. | 14.2 | 26.4 | 7.80 | 26.0 | | | 4.65 | | 9.6 | |
| Nov. 16 | 8 a.m. | None | 26.8 | 7.64 | | | | | | | |

The administration of fluids intravenously was discontinued 31 hours after the exchange transfusion had been completed. The patient's oral intake was sufficient, and he began to take a soft diet. Forty-eight hours after admission the patient began to sit up and feed himself. Nevertheless, he did continue to be rather irritable. A complete neurological examination at that time was entirely negative.

A recheck of the patient's serum electrolytes on the third day found them to be entirely within normal limits. The patient had completely recovered. A urinalysis and a complete blood cell count were normal. The laboratory reports of the tests done on the blood drawn during this three-day interval are presented in table form for better comparison and clarification (see table).

## Comment

Methyl salicylate because of its characteristic odor and taste is used in low concentrations as a flavoring agent. Because of this quality and its use about the house in several ointments, jellies, and sprays, it is frequently ingested accidently by children. Oil of wintergreen is nearly a pure substance and contains 90% salicylate. The toxicity of this drug is not fully realized by all physicians. The toxic dose of methyl salicylate is two-thirds that of sodium salicylate. The gastrointestinal absorption of the drug is rather rapid; nevertheless, gastric lavage should be performed even in cases of poisoning which are seen late.

Methyl salicylate is converted in the stomach to methyl alcohol, which is absorbed as such, and salicylic acid, which is absorbed after being converted to sodium salicylate in the intestines. The methyl alcohol is seldom produced in sufficient quantities to play much part in the picture of poisoning. The effect that is produced is that of salicylism, as 75% of the methyl salicylate is available as salicylate. A teaspoonful of oil of wintergreen will supply 45 grains of salicylate, more than a sufficient quantity to endanger the life of any infant or small child.[1]

The salicylate is rapidly distributed throughout all body fluids. For example, it can be detected in synovial, spinal, and peritoneal fluid, saliva, bile, and milk. The ester is rapidly hydrolyzed in the plasma and tissues to salicylic acid and its metabolites. Approximately 70 to 80% of the salicylates in human plasma is bound to the nondiffusible components, presumably plasma protein. Salicylates are excreted in the urine in the form of salicylates or their metabolites. Excretion is generally slow, about 50% in 24 hours, but can still be found after 48 hours. A small amount of administered methyl salicylate is excreted as such and imparts the odor of oil of wintergreen to the urine.

An important point to be noted is that from 4 to 8 ml. of methyl salicylate (oil of wintergreen) is considered a lethal dose, depending upon the size and general condition of the child. The mortality from this type of intoxication varies in different series of patients from 49 to 62.5% with present day methods of treatment. If treatment is not begun, death occurs in 12 to 36 hours after the ingestion of a lethal quantity. The clinical findings of methyl salicylate intoxication are the same as those of sodium salicylate and acetylsalicylic acid. They are excitation of the central nervous system, intense hyperpnea, hyperpyrexia, nausea, vomiting, dimness of vision, occasional diarrhea, generalized convulsions, and coma. Cardiovascular collapse and respiratory insufficiency ensue; terminal asphyxial convulsions sometimes appear. Death results from respiratory failure after a period of unconsciousness.

Most of the clinical features of this type of intoxication are due to the acid-base balance and electrolyte structure of the plasma.[2] In salicylism, the role of central nervous stimulation is one of the two most important factors in changes of the acid-base equilibrium of the blood. The hyperventilation causes a carbon dioxide deficit of the blood with a rise in the pH of the blood, so that a respiratory

alkalosis is present at the onset. If the patient is seen early and at this stage, the carbon dioxide content will be normal or low but the pH will be elevated.

The concentration of the base bicarbonate and carbonic acid is normally maintained in the blood in a ratio of 20:1 such that the blood pH is 7.41. The continuous carbon dioxide deficit results in a decrease of carbonic acid content of the blood and a resultant increase in the normal 20:1 ratio. This accounts for a rise in the pH of the blood.

Whenever the ratio of the concentration of base bicarbonate to carbonic acid in the serum is altered, the body immediately attempts to return to the normal 20:1 ratio. Consequently, with the continual carbon dioxide deficit, the body compensates by decreasing the bicarbonate of the blood. The kidneys promote this by the excretion of bicarbonate in the urine. Complete compensation is rarely attained except in mild disturbances. In pathological conditions the pH of the blood usually is changed in the same direction from the normal as the bicarbonate changes in metabolic acidosis and alkalosis and in the reverse direction from those of the bicarbonate in respiratory acidosis and alkalosis.

The secondary factor then occurs, a decrease in buffer base. This plus the continuous carbon dioxide deficit produces a combined respiratory and metabolic disturbance. The exact mechanism of the metabolic disturbance is still controversial. It is related to an abnormal metabolic production of organic acids and the removal secondarily of fixed base by the kidneys plus an attempt by the kidneys to remove abnormal metabolic end-products. Others feel that the acidosis is primarily due to a ketosis resulting from a poisoning of the Kreb cycle of carbohydrate metabolism by salicylates with inhibition of the utilization of lactate. This would explain the ketones usually reported in the urine of these patients.

In 1955, Boggs and Anrode [3] treated a patient with boric acid poisoning with an exchange transfusion. They pointed out its possible use and value in other types of poisoning. In 1956, Done and Otterness [4] successfully treated a patient with salicylate intoxication with exchange transfusion.


## Summary

On arrival at the hospital, the child reported on in this paper was in an acute critical condition and his chances for survival were very meager. He was successfully treated 27½ hours after he had ingested methyl salicylate and discharged from the hospital an active, robust youngster 7 days after admission. The blood salicylate level on admission had been 72.7 mg. per 100 cc. and was reduced by only 42% after the exchange transfusion of 1,200 ml. of whole blood. This was the equivalent of the child's total blood volume based on the child's weight of 13.8 kg. (30 lb. 8 oz.). After the exchange of 2,035 ml., the salicylate level was reduced by a total of 59%. The exchange of this large a quantity of blood was well tolerated by a child even at that age. When the patient was checked in the clinic 10 days after the exchange transfusion, he was considered entirely normal by the examining pediatrician. During his three days at home his parents considered his behavior completely unchanged from that which he had displayed prior to the ordeal of this acute poisoning. Thus the apparent value of exchange transfusions in methyl salicylate poisonings is emphasized.


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### References


1. Craig, J. O.: Poisoning by Volatile Oils in Childhood, Arch. Dis. Childhood **28:**475-483 (Dec.) 1953.

2. Dodd, K.; Minot, A. S.; and Arena, J. M.: Salicylate Poisoning: Explanation of More Serious Manifestations, Am. J. Dis. Child. **53:**1435-1446 (June) 1937. Farber, H. R.; Yiengst, M. J.; and Shock, N. W.: Effects of Therapeutic Doses of Aspirin on Acid-Base Balance of Blood in Normal Adults, Am. J. M. Sc. **217:**256-262 (March) 1949. Hartman, A. F.: Symposium on Rheumatic Fever: Acute Salicylate Poisoning, J. Pediat. **26:**214-215 (March) 1945. Erganian, J. A.; Forbes, G. B.; and Case, D. M.: Salicylate Intoxication in Infant and Young Child: Report of 13 Cases, ibid. **30:**129-145 (Feb.) 1947. Singer, R. B.: Acid-Base Disturbance in Salicylate Intoxication, Medicine **33:**1-13 (Feb.) 1954. Riley, H. D., and Worley, L.: Salicylate Intoxication, Pediatrics **18:**578-594 (Oct.) 1956.

3. Boggs, T. R., and Anrode, H. G.: Boric Acid Poisoning Treated by Exchange Transfusion, Pediatrics **16:**109-114 (July) 1955.

4. Done, A. K., and Otterness, L. J.: Exchange Transfusion in Treatment of Oil of Wintergreen (Methyl Salicylate) Poisoning, Pediatrics **18:**80-85 (July) 1956.


**Hodgkin's and Related Diseases.**—Forty-two patients have been treated with *p*-bis (2-chloroethyl) aminophenylbutyric acid (CB 1348). These include 24 patients with Hodgkin's disease, 10 patients with monocytic leukemia, 3 patients with chronic lymphatic leukemia, 1 patient with lymphosarcoma, 1 patient with acute lymphatic leukemia, 1 patient with mycosis fungoides, and 1 patient with multiple myeloma. Excellent remissions were obtained in six patients with Hodgkin's disease, one patient with reticulum-cell sarcoma, and one patient with monocytic leukemia. Marked improvement was obtained in nine patients with Hodgkin's disease. . . . CB 1348 is of value in the treatment of selected patients with Hodgkin's disease as a supplement to x-ray therapy. It has been a safer drug in our hands than triethylenemelamine (TEM). It is preferred over nitrogen mustard in same cases, because it has practically no side-effects and it has proved to be less damaging to the hemopoietic system.—B. A. Bouroncle, M.D., and others, Evaluation of CB 1348 in Hodgkin's Disease and Allied Disorders, *A. M. A. Archives of Internal Medicine*, June, 1956.

# COUNCIL ON DRUGS

## Report to the Council

*The Council has authorized publication of the following report.*

H. D. KAUTZ, M.D., *Secretary.*

*Thallium is an extremely toxic chemical. It is one of the more insidious poisons because of the delayed and undistinguishing character of most of its symptoms and because of the difficulty in treating intoxication or preventing disabling after-effects. It is an unfortunate fact that effective baits containing poisons for rat, mouse, and cockroach control usually are food products which are also quite acceptable to children and pets. When this factor is aggravated by careless storage of attractive packages within reach of children, by the fact that there is no legal way to require supervision over the ultimate user, and by the fact that he may overlook proper labeling, it is not surprising that concern over the health hazards of thallium should develop.*

*This concern is not unfounded, as evidenced by the alarming incidence of thallium poisoning in Texas during the past two years. The growing number of cases of accidental poisoning in children, with pesticidal uses of thallium, threaten to place it in the same disrepute that it presently suffers as a drug and cosmetic. The availability of effective and less toxic insecticides and rodenticides suggests that sanitation and the public welfare would not be penalized by discouraging its use as a household chemical.*

BERNARD E. CONLEY, PH.D., *Secretary, Committee on Pesticides.*

## THALLOTOXICOSIS—A RECURRING PROBLEM

With the abandonment of thallium as an internal medicament and depilatory, the incidence of accidental injury caused by it in this country has been markedly reduced. Today, the principal uses of thallium are in the control of rats, mice, ground squirrels, prairie dogs, moles, and insects such as ants and roaches. Periodically recurring episodes of poisoning associated with these pesticidal uses focus attention on the dangerous nature of this economic poison, especially when it is used in and around the home.

Thallium sulfate, containing approximately 80% of the metal, is the only form of the poison used in pesticidal formulations. It is a heavy, white, water-soluble salt resembling table salt in general appearance and has a definite astringent taste. This taste apparently is not objectionable to rodents or insects in the concentrations present in baits. It acts as a general cell poison with cumulative properties and a variety of toxic manifestations. Thallium is more toxic than is lead and as pernicious in its effects. Although toxic to plants and to soil, the amounts of thallium contained on poisoned grain used as bait are said to be noninjurious to soil and vegetation.

Thallium is readily absorbed through the skin and from the alimentary tract. It is distributed to all tissues, especially the muscles, spleen, and kidneys. Cumulation may be followed by a sudden release of poison from tissues, such as that which occurs with lead poisoning. It accumulates to some extent in the skin and hair, but, unlike lead, it is not selectively retained in the bones. Thallium is found in all body fluids but is excreted mainly in the urine. In fatal cases, milk may be toxic to sucklings, and thallium poisoning occurring before labor has been reported to be lethal to the newborn infant.

The action of thallium is due to the thallium ion, the univalent form of the metal. It is extremely toxic to all forms of life, and the $LD_{00}$ for humans is in the range of 0.2 to 1.0 Gm. Symptoms of acute poisoning are variable but generally conform to those of heavy metal poisoning. They are referable to the gastrointestinal tract and nervous system. Symptoms develop quite slowly, being delayed from several hours to two days. Digestive disturbances include a metallic taste, salivation, stomatitis, nausea, vomiting, and abdominal pain. Vasomotor disturbances may be reflected in puffiness of the cheeks, eyelids, and lips. Tingling and pain in the hands and feet, muscular weakness, delirium, convulsions, and coma may ensue. Death can occur in a few days or be delayed several weeks. Disintoxication is slow, and recovery requires six or more months. Sequelae in the form of sensory and nervous disorders, such as ataxia and choreiform movements, blindness and other paralyses of the special senses, psychoses, peripheral neuritis, and kidney damage, are not unusual.

The symptoms of chronic poisoning are similar but milder. In addition to the digestive and sensory disturbances, there may be neurological manifestations such as incoordination and paralysis of the extremities, encephalitis, endocrine disorders, psychoses, and epilation.

Loss of hair is the most familiar sign of thallium intoxication. It usually appears in the first 10 to 14 days of the disease, but it may not be evident in persons dying within a few days after absorption of large amounts of the poison. The mechanism of hair loss is unknown. Alopecia is fairly characteristic of thallium poisoning although it may also occur in chronic arsenic, lead, and mercury poisoning, after roentgenography and employment of radium, and after the use of certain hair preparations and drugs. It rarely occurs after acute poisoning by compounds other than thallium salts.

Little is known about the specific treatment of thallium poisoning. There is no evidence that iodides materially affect the course of poisoning once significant amounts of thallium have been absorbed. The value of sodium thiosulfate, calcium, or other agents to mobilize thallium from the tissues remains unproved. There is no basis in experimental animal evidence for the use of dimercaprol (BAL) in the treatment of thallium poisoning. Symptomatic (analgesics, sedatives) and supportive measures (physical medicine, maintenance of nutrition and fluid balance) are often required to counteract the widespread and profound alterations of vital functions which invariably occur.

Thallium poisoning in man has had a rather notorious record. This chemical has been frequently used for suicidal or homicidal purposes, and these intentional misuses are part of the justification for the strict regulation of this poison in Australia, England, France, and elsewhere. In New South Wales, Australia, the frequency of intentional poisoning has been so alarming in recent years that a ban on the importation of thallium was threatened. In Europe, thallium is now claimed to be superseding arsenic as a homicidal agent. Aside from its intrinsic efficiency for this purpose, thallium is used, in part, because of easy availability and, in part, because of publicity which has accompanied its use in murders.

Therapeutic poisoning or injury from cosmetic depilatories containing thallium has largely disappeared. Industrial poisoning has always been infrequent, and only a few reports have appeared in the literature. Last year, thallium poisoning in workers impregnating grain was reported from several small industrial establishments in Sweden. Handling the powder without gloves and possible contamination of skin and clothing by liquid thallium impregnate were thought to be the causative factors in injury.

Food poisoning from the ingestion of accidentally contaminated products is occasionally reported. The first and the most widely publicized of these reports occurred in the early 1930's in California. It was associated with the ingestion of thalliferous tortillas by 31 Mexicans, 7 of whom died. More recently, in Turkey, food poisoning occurred from ingestion of bread made with thallium-containing flour thought to be contaminated by grain impregnated with this rodenticide. Contamination was sufficient to cause the death of two children and poisoning of five others. Secondary poisoning from the ingestion of the meat of a hen who had consumed poisoned grain was reported from East Germany several years ago. A Finnish report described nonfatal accidental poisoning of two small boys who ingested thallium-treated peas intended for the destruction of pigeons.

An alarming increase in the incidence of thallotoxicosis in infants and children has been reported in Texas this year. Three deaths and well over 60 serious thallium poisoning cases in small children have been recorded in the state's major population areas in a six-month period. The high incidence of poisoning is attributed to the easy accessibility and availability of ant and rodent poisons containing thallium, which are prepared and packaged in a manner especially attractive to children. The problem is not peculiar to Texas, however. Similar cases have been reported from New York to Oregon but with greatest frequency from the southwest and western states.

Thallium is used in these areas principally as an insecticide and rodenticide in the form of a sirup, jelly, and paste for use alone, or it is applied to foods such as bread and cake crumbs, chocolate, peanut butter, nuts, and cereal grains. Homemade and ready-made poison baits containing 1 to 5% of thallium are dispensed alone or in makeshift containers such as bottle caps or short sections of soda straws. The sweetness or savoriness of the bait, coupled with the attractiveness and availability of the bait container or carrier, contributes to the hazards of this material, especially for small children and household pets. Efforts, short of legislation, to encourage more careful distribution and to modify formulations and packaging to make pesticides containing thallium less appetizing and attractive to children have met with little success. One Texas city banned the general sale of insecticides containing 3% or more of thallium. An injunction against marketing these products was threatened at the state level.

When thallium products are needed for the control of highly resistant species of insects and rodents, they should be subject to the type of restriction invoked for very dangerous substances, namely, use by experienced personnel familiar with its hazards and trained in its handling. This recommendation is neither new nor novel. Over 30 years ago, a similar recommendation was made in THE JOURNAL in an early review of the hazards of thallium used in agriculture. The intervening years have provided ample evidence to support the wisdom of the recommendation.

THE JOURNAL
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## "MENINGITIC" BREATHING

IN 1876 there was published a description of the peculiar breathing noticed in some patients with meningitis.[1] The words in which Biot recorded his observations have been translated as follows: "This irregularity of the respiratory movements is not periodic, sometimes slow, sometimes rapid, sometimes superficial, sometimes deep, but without any constant relation of succession between the two types, with pauses following irregular intervals, preceded and often followed by a sigh more or less prolonged."[2] The verbal description was accompanied by tracings which are reproduced in Major's textbook; they clearly show the inequality of the individual respiratory movements and the impossibility of predicting when the next inspiration will occur and what it will be like.

This condition is of both theoretical and practical importance. Physiologically it indicates a profound disorganization of the mechanisms that control respiration. Practically, in the days before the invention of respirators, it was an ominous prognostic sign. Nowadays it is an indication that asphyxia is imminent and that the patient needs mechanical respiratory assistance of some sort.

The overwhelming majority of textbooks of physiology, unfortunately, define Biot's breathing quite differently. This is exemplified by two recent textbooks; both describe Biot's breathing as "periodic," related to Cheyne-Stokes breathing, and consisting of groups of full respiratory efforts.

Dictionaries, for some reason, have taken a different course, and prefer to think of Biot's breathing (or "meningitic" breathing, the accepted synonym) as "rapid respiration with rhythmical pauses" or "short and rapid breathing interrupted by pauses of 10 to 30 seconds" or "shallow breathing interrupted by long pauses" or "abruptly alternating periods of apnea and hyperpnea." The error is not confined to American publications, for it can also be found in some distinguished European textbooks and dictionaries, some of which give the phrase "periodic breathing" as a synonym for Biot's.

If the majority is right, then clearly Biot was wrong and the shrinking minority who persist in defining Biot's breathing as he did are wrong too. Or, if they are right, they will be taking a risk whenever they use this unhappy phrase. THE JOURNAL has long waged a fight against eponymic phrases generally in the medical vocabulary.[3] In the special case of Biot's breathing there is not only the general objection but also the particular fact that a writer who uses this phrase today in its original sense, as explicitly set forth by the man who described the phenomenon, will be misunderstood by more than half of his readers. This confusion obviously cannot be cleared up by the action of any one author, lexicographer, or editor; it is much too late in the day for that. The solution is much simpler. A physician observing that a patient's breathing is jerky and irregular, instead of reporting that "the patient is manifesting Biot's meningitic respiration," can write that "the patient's breathing is jerky and irregular."

1. Biot, M. C.: Contribution à l'Étude du Phénomène Respiratoire de Cheyne-Stokes, Lyon Médical **23**:517, 561, 1876.
2. Major, R. H.: Physical Diagnosis, ed. 5, Philadelphia, W. C. Saunders Company, p. 114.
3. Confusion of Tongues, editorial, J. A. M. A. **154**:1093 (March 27) 1954.

## THE BIG PARADE OF 1958

When the Congress reconvenes next January, legislators in both political parties, mindful that 1958 is an election year, will be making special efforts to espouse measures with a maximum of vote-getting appeal. There will be a big parade of bills designed not only to solve real or imaginary problems but also to create popularity with the folks back home. As in all other election years, one of the largest and most varied sections of the parade will be the one devoted to the theme, "Let's give more and bigger social security benefits." Many floats of all sizes and colors already have been entered, and a large number of new entries can be expected during the second session of the current Congress. One of the subjects which is attracting the interest of more and more members of Congress, and which is almost certain to receive serious consideration next year, is free hospital care for beneficiaries under the Social Security Act.

At least four bills on this subject were introduced in the 1957 session. Of these, the one that will probably receive most attention next year is H. R. 9467, entitled Social Security Amendments of 1958, introduced by Rep. Aime J. Forand (D., R. I.). Mr. Forand told the House of Representatives that President George Meany of the AFL-CIO had endorsed his proposed amendments as "necessary, sound, and enlightened." The Forand bill, which also would increase social security benefits all along the line and would raise both the taxable base and the tax rate, would provide the following hospital and medical program:

1. Persons receiving or eligible for Old Age and Survivors Insurance retirement and survivorship (but not disability) benefits, including surviving widows and children, would be covered by the plan.
2. Hospital services paid for by the social security system would be "the usual hospital services in semiprivate accommodations."
3. A combined total of 120 days of hospital and nursing home care would be allowed each year, but not more than 60 days of this could be hospital care.
4. The OASI money also would pay for necessary surgical services in the hospital and for emergency or minor operations performed in an outpatient department or a physician's office.

Enactment of such a plan would be the most direct and drastic step yet taken toward the ultimate development of government-dominated medicine in America. Its adoption would inevitably be followed by countless proposals to lower or eliminate the age requirement, increase the annual allowance of hospital and nursing home care, expand the surgical benefits, include inhospital medical care, extend the plan to home and office calls, and, finally, to adopt a comprehensive system of national compulsory health insurance. The 1958 election year parade in Washington will offer many attractions and sideshows, but none of them demands more serious attention from the medical profession than the issue of hospital and surgical benefits for social security beneficiaries.

## FARM-CITY WEEK, NOVEMBER 22-28, 1957

The 1957 Farm-City Week, now being observed throughout the nation in thousands of communities, is being co-sponsored locally in many areas by the medical profession through its societies. Nationally, the American Medical Association is acting in concert with 150 of America's largest and most representative organizations and industries to bring about better understanding between the rural and urban segments of our society. Farm-City Week, which has been proclaimed by the President of the United States at the request of the Congress, seeks to demonstrate through all mediums the economic, social, and cultural interdependence of city and country neighbors. Consequently, the programs planned for this observance include dozens of activities designed to permit farmers and urban citizens to tell their stories to each other; to mingle with each other on a social or semisocial basis; and to portray to each other the role that each plays in the progress of the nation. Through this emplasis on the need for cooperation and understanding, the aims of this week will be achieved by dispelling the antagonism and lack of sympathy that exist among those who fail to appreciate the other fellow's problems.

President Eisenhower, in his proclamation of Farm-City Week, called attention to this need for civilian unity because "the productivity of the farms and of urban labor and business continues to provide the food, the tools, the services, and the goods that afford our citizens the highest standard of living in the world."

The sponsoring National Farm-City Week Committee, of which the American Medical Association is a member, has again asked Kiwanis International to act as coordinating agency through its 4,400 clubs throughout the country. In areas where Kiwanis is not located, however, the observance is being spearheaded by farm bureaus, granges, and county agricultural agents, the latter at the request of the U. S. Department of Agriculture. These groups, as well as representatives of industry, chambers of commerce, and professional and fraternal organizations, are united at the local, state, and national levels to insure a well-integrated program. Each of these sponsors has its own approach to building closer relationships between town and country neighbors, yet all are acting jointly to achieve the same goal. Consequently, medical societies, whose members provide medical care and guard the health of both rural and urban communities, have a place in this observance.

The unity of organized medicine, and the community services that result from it, are being demonstrated effectively during Farm-City Week. Because of the medical profession's responsibility to both urban and rural citizens, medical societies are taking an active role in highlighting their work in behalf of the public. As in the past two years of participation in Farm-City Week, societies in many areas are again presenting programs outlining their community activities in school health, rural distribution of physicians, nutrition, safety, preventive medicine, environmental sanitation, mental health, career counseling, and many other services benefiting the entire population. Farm-City Week affords a splendid opportunity to broaden the relationships between the medical profession and the public, both urban and rural, and the benefits that accrue through understanding and cooperation are those that have led to America's strength and prosperity. It was with this in mind that Thanksgiving Day was appropriately chosen as the concluding day of Farm-City Week.

# ORGANIZATION SECTION

## PHILADELPHIA CLINICAL MEETING

Attention is called to several special features at the Philadelphia Clinical Meeting.

### Buses

Arrangements have been made for special buses to run between the hotel area and the Convention Hall every 10 minutes during the peak periods and at frequent intervals during the rest of the time.

### Sneak Preview

On Tuesday evening, Dec. 3, at 9 p. m., in the ballroom of the Sheraton Hotel, a special sneak preview of the latest March of Medicine television program, "M.D. International," will be shown. This hour-long documentary film depicts the work that American doctors are doing in remote corners of the globe—Korea, Hong Kong, Burma, Sarawak, Nepal, India, Lebanon, and Ethiopia. A special March of Medicine team traveled more than 34,000 miles to film these doctors in their unofficial roles as America's "medical diplomats." The program will be presented over the NBC-television network in January by Smith, Kline & French Laboratories in cooperation with the American Medical Association.

### Transatlantic Conference

On Wednesday afternoon, Dec. 4, at 3 p. m. (Eastern Standard Time), in the ballroom of Convention Hall, British scientists will join American scientists in a transatlantic conference on "Advances in the Chemotherapy of Cancer with Special Reference to the Leukemias." The British meeting in London will take place at 8 p. m. (Greenwich Time) and the two groups will be joined by an undersea telephone cable. Arrangements have been made for physicians attending the Clinical Meeting to hear the discussions over a special high-fidelity hookup. The special feature will be sponsored by the A. M. A. and Britain's Royal Society of Medicine in cooperation with Smith, Kline & French Laboratories. In addition to Philadelphia and London, this transatlantic medical meeting, the second in history, also will be heard at the National Institutes of Health, Bethesda, Md.

### Westminster Choir

On Thursday evening, Dec. 5, at 8:15 p. m., in the ballroom of the Sheraton Hotel, the Westminster Choir of Princeton, N. J., will give a concert for members and guests of the A. M. A. Complimentary tickets may be obtained at the Woman's Auxiliary Desk, adjacent to the General Registration Desks in Convention Hall. The concert is presented through the courtesy of Winthrop Laboratories, Inc.

### Historic Tours

On Friday afternoon, Dec. 6, tours will be conducted to places of historic interest. Transportation will be arranged for those who are interested, leaving the Bellevue-Stratford Hotel at 2 p. m., with visits to the following places: (1) College of Physicians; (2) Pennsylvania Hospital; (3) Philadelphia General Hospital (Osler Museum); (4) University of Pennsylvania Hospital and Medical School; and (5) Lankenau Hospital.

Arrangements must be made in advance, either at the History of Medicine booth, space 427, in the Scientific Exhibit, Convention Hall, or by communicating with the Chairman of the Subcommittee on Tours, Dr. Herbert J. Dietrich Jr., 2035 Delancey Pl., Philadelphia 3.

## PLAN A. M. A. CONFERENCE ON AGING

A national conference on aging, the first of its kind under auspices of the American Medical Association, is being planned for late next spring or early fall. The A. M. A. Council on Medical Service, last Oct. 12, voted to approve such a conference, as recommended by its Committee on Aging. The Committee expects to bring together representatives of medical societies and of federal and voluntary agencies which are developing solutions to problems of the aged. In recent months the Committee has been meeting in different regions of the country to become better acquainted with varying local aspects of these problems, and to develop material for use by state and county medical societies. This program will continue with a session in Philadelphia just prior to the A. M. A. Clinical Session, and with other meetings later in the Middle West and the Eastern Seaboard areas.

A culminating national conference, according to Committee plans, will have four purposes: delineating medical and related problems concerned with aging; reviewing up-to-date efforts to meet these problems; examining the efforts and current planning as they relate to the medical profession; and recommending activities and relationships in the field of aging for development by the A. M. A. and its component medical associations.

"Many programs are developing," said Dr. Henry B. Mulholland of Charlottesville, Va., Committee Chairman. "The Committee sees its tasks as those of leadership and direction in all aspects of aging having to do with health and medical care."

## COUNCIL ON MEDICAL SERVICE

*The Committee on Prepayment Medical and Hospital Service has sponsored publication of the following report.*

# MEDICINE'S ROLE IN FINANCING HEALTH CARE COSTS

David B. Allman, M.D., Atlantic City, N. J.

The primary role of the physician is to provide medical service. His role in the financing of that service has, traditionally, been secondary. But, for many reasons, he has had to concern himself with the problem.

Prior to the depression of the 1930's, the predominant method of payment for physicians' services was on a fee-for-service basis, on a sliding scale related to the patient's ability to pay. Physicians treated the indigent for nothing, the low income group on a reduced fee basis, charged a normal fee for the middle income patient, and increased the fee for the upper income group.

### Medicine Assists in Financing Plans

The prolonged depression created a new situation. The indigent and low income groups increased substantially and individual physicians found themselves unable to handle the load. Medical societies then began to assume a role in financing health care costs. They organized a variety of post-payment plans for the indigent and low income groups and assisted in the development of plans sponsored by government for the same groups.

Later, when federal forces began to agitate for compulsory health insurance, many medical societies became interested in prepayment of medical service. Following the already rapidly developing Blue Cross pattern and, in the absence of a flourishing health insurance industry, they developed the Blue Shield plans. In this development, medicine assumed the role not only of organizer and operator of a financing mechanism, but where service plans or combination service and indemnity plans appeared, individual physicians assumed the role of partial underwriters of benefits.

### Doctor's New Role in Financing Care

It is interesting to note the difference between the roles played by individual physicians and medical societies. The individual physician devoted himself primarily to the care of his patients, varying his fee to suit the financial status of the patient. As other mechanisms have been developed—which we call third party arrangements—and a large percentage of his patients no longer pay directly for his services, his role in the financing process has changed. Now his role is to establish his fees, and treat his patients as if a third party mechanism did not exist, so as to prevent over-utilization of services and increased costs.

The role of medical societies, on the other hand, is to make every effort to ensure that individual physicians, regardless of the type of program in which they participate, are free to provide their best services to their patients. The societies study and review the operations of the various third party mechanisms for financing health care, analyze their effect, immediate and long term, upon medical practice and interpret this effect to the profession.

### A. M. A. Reflects Attitudes of Doctors

In its national role of interpreting the effect of a variety of medical care plans and financing mechanisms on medical practice, the A. M. A. has had to reflect the opinions of its affiliated medical societies—and these opinions have often exhibited sharp differences. Throughout the fabric of medicine's philosophy there exist, however, several basic criteria for judging financing mechanisms: government should play a minimum role; the buyer and seller of medical service should enjoy a maximum of freedom; there must be incentives to the physician and the patient to exercise restraint in the utilization of medical services.

Ideally, physicians believe in the provision of medical service on a fee-for-service basis; a market in which a multitude of individual purchasers of medical care can choose freely and voluntarily the physician they want. The free choice concept is obviously not confined to medical care. It is a basic concept of our American system. Clarence Randall, in his book "The American Way," makes this explanation:

> "The outward manifestation of the American system at work is freedom of choice for the individual in every activity of his life. The more that society can contrive to leave him free to select the aims for his life and the means of satisfying his own needs as he conceives them to be needs, the more willingly will he give of his best efforts in order that those ends may be attained."

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President, American Medical Association.

Read before the annual meeting of the Health Insurance Association of America, May 8, 1957, Washington, D. C.

Under these circumstances medicine operates in a competitive climate that fosters incentive, rewards ability, and smothers mediocrity. But medicine has had to yield, although its basic tenets remain. It yielded to financing mechanisms that clearly restrict the seller's right to price his service, when it was convinced that the only alternative was submission to even less acceptable conditions. Physicians, for example, in many areas developed and participated in Blue Shield plans of the service type in which the free pricing mechanism for a large segment of the population was violated because they felt that even less desirable third party control would have ensued had the profession itself not sponsored prepayment service type plans.

### Controversy Continues Over Sponsorship

From the beginning, the profession was split on this question of sponsorship of service type benefits. And today the controversy continues. Many consider that physician-sponsored plans must stress service or cease to exist, while others condemn the approach as paving the way to control of medical practice by third parties. Even among the service advocates intense controversy exists in connection with the income level at which the service benefits are to apply. Some demand low income levels so as to assure a self-contained, relatively limited, program, while others maintain that the plan serves neither the public nor the profession well unless the income level is increased so that a reasonably large segment of the public can be covered. You are familiar with most of these considerations some of which have already been discussed this morning. I mention them only to emphasize the point that the physician has, by the pressure of events, come to play a more important role in financing mechanisms than he ever conceived would have been possible only a few years ago.

Medicine was always alert to the dangers inherent in so-called contract practice, in which a physician is retained by a third party—whether a mining company, labor union, hospital is immaterial—and his services are provided under auspices of the third party—especially when combined with prepayment. In certain instances medical care plans, tying prepayment to closed panels of physicians, have threatened the economic freedom of many physicians and interfered with the freedom of many individuals to select their physicians without coercion.

The application of voluntary health insurance, whether service or indemnity, to the financing of medical care has always been supported by the A. M. A. The false notion—often repeated—that the A. M. A. opposed voluntary health insurance at its inception is derived from the A. M. A.'s concern, expressed strongly, about contract practice, not prepayment. It has repeatedly expressed its vigorous support of the health insurance industry as well as the Blue Shield plans. Consistently, it has questioned prepayment or health insurance mechanisms only when they were combined with medical care plans in such a way as to restrict free choice by the subscriber and promote control of the physician by a third party interested only incidentally in the quality of service given.

### A. M. A. Always Favored Voluntary Plans

We have attempted to provide impartial strong support of both Blue Shield and commercial health insurance techniques because we have felt that neither violates the basic principles of free choice, fee-for-service and medical ethics.

### Future Costs Difficult to Predict

Insurers in the field of health obviously are concerned with a product—medical service—whose cost and incidence are profoundly difficult to predict. You might expect medicine to exercise a favorable impact on them but for many reasons the outlook is not so clear. The future extent and cost of illness will depend on many factors. The advance of medical science will create new diagnostic and therapeutic methods not now foreseen. New drugs will be developed whose effects on the course of human disease will equal or exceed today's wonder drugs. The prolongation of life will increase those diseases of senescence which can be palliated, but not cured. The chronic diseases of aging will increase. Ancillary health services—especially in technical fields like chemistry, physics, biology, and others—will demand more recognition. Sudden economic change will induce rapid changes in the incidence of disease.

The role of the physician is not necessarily, then, to make your job easier. As the quarterback of an expanding team of highly technical disciplines he may in fact, innocently but surely, complicate your problems. The advance of medical science, and the improved accessibility of medical service, may in fact increase the totality of disease and the cost of diagnosing and treating it.

### Approaching Crucial Period

Thus advancing medical science and the aging of the population may create cost problems—especially for the service type plans—that must be met by changes in prepayment and insurance mechanisms that permit a reasonable degree of responsi-

bility to be assumed by the patient. And here medicine can assume its role of technical advisor to the purveyors of health insurance. As medical experts, perhaps we can point out some of the pitfalls that lie ahead. The fact is that we are probably approaching a crucial period in health insurance because of precedents of the past, which still dominate much thought, primarily deriving from the original Blue Cross service concept. These problems are being now compounded by the insistence of labor—with certain exceptions—on full payment for complete medical care. This objective is not reasonable because the cost, under such plans, is infinite due to uncontrollable demand. The British experience confirms this point. Without a built-in, self-containment mechanism, medical care plans are highly susceptible to inflationary over-expansion.

In those financing mechanisms in which the patient himself does not assume a portion of the financial burden, someone else must do it. In the Blue Shield plan of the service type, the physician in a sense becomes the shock absorber and assumes a portion of this burden by agreeing to accept relatively low fees. In the Blue Cross service type mechanism, the pressure leads to proffered subsidization from government since in this instance the hospital, unlike the physician, is not in a position to lower its rates and reduce the burden on the subscriber.

It is not without significance that the Blue Cross Commission and the American Hospital Association testified in favor of this administration's health reinsurance bill that properly was buried in committee. It can be expected that, as hospital rates continue to rise at an anticipated rate of five per cent per year, the pressure for increased Blue Cross premiums must also increase. Under these circumstances it would not be surprising if the Blue Cross sought government subsidy ever more vigorously.

### Encouraging Signs

In the indemnity type plans the pressure to maintain reasonably low premiums and a favorable benefit structure has led to the development of deductible and co-insurance provisions—the so-called major hospital and medical expense insurance. This type of coverage was inevitable from the beginning, for there is built into it a control against over-use. Furthermore, it is susceptible to the introduction of more extensive benefits at lower premiums and less supervision of those providing the health service because of the assumption by the subscriber of the first dollars of expense. It is obvious that no physician can consider this type of insurance a threat to medical practice. The financing mechanism can have little effect on the quality of his services and the physician-patient relationship remains inviolate. From every point of view, the development of this type of contract has been one of the most encouraging incidents in the history of health insurance.

### More Cooperation Needed

I am convinced that the vast majority of physicians will cooperate wholeheartedly in the sense of maintaining equitable fees so that your promotion of this type of insurance will not be impeded. I am equally convinced, however, that your industry must step up markedly your program of physician-relations. You cannot expect physicians to understand fully the relation between fees and the salability of major medical insurance. Like the General Electric Company which adopted a deductible type policy, you must discuss frankly with practicing physicians and their local medical societies the needs and objectives of this type of insurance. Such a program of professional relations takes money and personnel but I urge you to undertake it.

### Our Goal—High Quality Care

How can we sum up the role and responsibility of medicine in the financing of health care costs? In an economic sense medicine seeks a price for its service at such a level that its services can be purchased by the public through reasonable financing mechanisms that do not adversely affect the quality of care rendered. Socially, the physician must oppose any financing mechanism that is a step toward the socialization of our economy. From the point of view of self interest he will expect an adequate compensation for his services so as to maintain medicine as a profession to which qualified men can continue to aspire without fear of financial depredation.

Administrative, ethical and socioeconomic considerations will cause medicine to question the joining of prepayment or insurance mechanisms with the provision of care by closed panels of physicians. Politically and legislatively the physician will oppose government programs that assume the responsibility for financing health care costs that are properly and more wisely the obligation and responsibility of individuals.

In a word, the physician will support or oppose any program for the financing of health care costs depending on the effect of that program on the quality of the service the physician renders. So long as the insurance you promote is consistent with the maintenance of high quality medical care you can be assured that medicine will support you.

# Selected Proceedings of the Association of Life Insurance Medical Directors of America—1956

*The Committee on Prepayment Medical and Hospital Service is sponsoring the publication of the following four articles previously published in the* Transactions of the Association of Life Insurance Medical Directors of America, *vol. 40, 1957. The papers were read at the 64th Annual Meeting of the Association of Life Insurance Medical Directors of America, New Orleans, Oct. 23, 1956. The opinions contained in the articles may not necessarily reflect the attitudes of the Committee. The articles are being sponsored for informational purposes. The Committee invites other items in the health insurance field to be submitted to it for submission to* THE JOURNAL.

## ECONOMIC TOLERANCE

P. C. Irwin, Des Moines, Iowa

As professional people you are familiar with the term "tolerance." There are many tolerances encountered in your profession. You use many tolerance tests in diagnosis. You find that people build up an immunity or tolerance to certain diseases and these tolerances are important in the guarding of the future health of our population. Today, the subject chosen for discussion is another type or group of tolerances which we might well call "Economic Tolerances."

First, it must be made clear that my remarks are based entirely on my own opinions. They do not necessarily represent the opinions of the company with which I am connected. Some of you will disagree with these opinions, but the fact that you permit me to express them demonstrates the democratic privilege of free speech.

While I am not an expert on accident and sickness insurance and am not qualified to speak to you on the technicalities of that type of coverage, my experience and training do qualify me to view some of the problems in proper perspective. It is this over-all picture which is the subject of this discussion, and it will exclude detailed references to statistics in regard to the history and the present scope of accident and sickness coverage. However, a little background on this subject will be useful in orienting our thinking. The impetus for the growth of hospital and surgical-medical prepaid insurance was the impact of an economic necessity. In the case of hospital insurance on the group basis, this was made necessary by the financial difficulty in which the hospitals found themselves during and after the economic depression of the 1930's. Some system of prepaid coverage was necessary and the stimulation came through the nationwide organization of the Blue Cross Plans. Similarly, the impending danger of socialized medicine brought about the organization of the Blue Shield Plans. These two provide for what is known as the "service" type of benefits. The subscriber, at least the low income bracket subscriber, is guaranteed that his hospital or his doctor bill will be paid, and, if the plan is short of funds, the hospital or doctor is paid on a *pro rata* basis until the plan can again be made whole by an increase in premiums or an improvement in experience. In other words, the hospitals and doctors underwrite the plans through a participation agreement.

These plans have not been without their problems in the last few years. Designed originally to take care of the lower income groups on a rather modest basis, they have been plagued with the ever increasing cost of hospital and medical care and an increased utilization rate. Accordingly, numerous increases in rates have been necessary. Moreover, as incomes generally increased and the interest in prepaid benefits became greater, the higher income groups became prospects for these contracts. This posed a problem for the doctors since there has for many years been a practice of varying fees to some extent by the ability of the patient to pay. As the service income limits increased and the fee schedules to doctors increased, many doctors felt that their fees were being fixed by the Blue Shield Plans and that a third party was coming into the picture between the doctor and his patient, thus disturbing the freedom and confidential nature of doctor-patient relationships.

Although the Blue Cross and Blue Shield Plans must be given considerable credit for stimulating the development of voluntary prepaid insurance, the insurance companies have done a magnificent job in increasing this coverage on both a group and an individual basis. The insurance company contracts are on an indemnity basis rather than on a service basis, but the benefit schedules available are so varied that it is possible to fit a schedule into almost any type of situation. As a result there is little difference in actual practice between the service and indemnity type of contract, since the hospitals and doctors in many cases accept the indemnity schedule in full payment for services rendered.

Vice President and Actuary, Equitable Life Insurance Company of Iowa.

The Health Insurance Council in its report as of July 31, 1956, showed a total of over 115 million contracts of Hospital Expense Insurance in force. Of these, some 60 million were issued by insurance companies, about 50 million by Blue Cross–Blue Shield, and about 5 million by independent plans. Deductions for duplicate coverages indicate that over 107 million individuals are covered.

On surgical expense benefits, a total of some 100 million contracts are in force divided as follows: 57 million issued by insurance companies, 39 million by Blue Cross–Blue Shield, and 4 million by independent plans. Again deducting for duplications, there are approximately 92 million individuals covered for surgical expense.

Finally, in the field of medical expense coverage there are 59 million contracts divided as follows: 25 million by insurance companies, 29 million by Blue Cross–Blue Shield, 5 million by independent plans—a net total, after deducting for duplications, of nearly 56 million.

These figures are very arresting and show definitely the progress which can be made in voluntary health care through the efforts of all of the various organizations involved in this program. This growth has nearly all been accomplished in the last 15 years with a greatly accelerated growth in the last 10 years. In 1941 the total coverage in these areas was only 11 million for hospital care, 5 million for surgical benefits, and 3 million for medical benefits. Note also that the insurance companies have gone ahead of Blue Cross–Blue Shield plans. Furthermore, the insurance companies have entered the major medical field with coverage of over 5 million —a field which as yet has not been entered to any great extent by Blue Cross–Blue Shield. These figures do not take into consideration loss of income insurance, personal and group accident and dismemberment coverage, and other accident benefits included in automobile liability coverage and workmen's compensation.

Although the growth of these coverages has been phenomenal in the last 10 years, there is much yet to be done in expanding coverages and increasing benefits. Healthy competition between the insurance companies and Blue Cross–Blue Shield has done much to accelerate this expansion. However, there are signs recently that an unhealthy competition may be developing between these two classes of insurers. Both are trying to accomplish the same ultimate result, namely, to give the American people the best health care possible on a voluntary basis and thus avoid the dangers of socialized medicine. This problem deserves the cooperative effort of all. It deserves our "Economic Tolerance" because if we get at odds on this problem among ourselves, we may well find an outside element taking over.

You, gentlemen, as members of the medical profession and as Medical Directors of your respective companies, are in a key position in this cooperative effort. This point was emphasized in the talk which Dr. Williams, Medical Director of the Life Insurance Company of Virginia, delivered before the Medical Section of the American Life Convention in June of this year in which he said, "The success of the voluntary method will depend on the medical profession's self discipline in controlling charges and the insurance industry's performance in designing and administering its product in a manner that appears reasonable to physicians, hospitals and the public."

Doctors are individualists and rightly so—they will listen to advice from the members of their own profession quicker than they will the advice of outsiders. You can counsel with them on a professional basis. The doctors in private practice are not insurance experts. They do not understand certain insurance concepts. They are suspicious of what they do not understand because their whole training has been to accept new ideas only after they have been well proven—and with this conservatism we will all agree because many times lives are affected by their decisions and procedures.

Some weeks ago an article appeared in *This Week Magazine* entitled "Be Sure about 'Cures.'" The article was by Dr. Donald A. Dukelow, Bureau of Health Education of the American Medical Association. In making his point about being sure, the author quoted from Kipling's poem "The Elephant's Child."

> I kept six honest serving men
> They taught me all I knew
> Their names are What and Why and When
> And How and Where and Who.

This is what the doctors are inquiring about in connection with prepaid medical care, namely, What, Why, When, How, Where, and Who. You, gentlemen, can help them find the answers to these questions. Many of you have already given of your time to this matter. Much of the success of any plan of prepaid medical care rests in the hands of the practicing physicians. They send their patients into the hospitals. They control the length of hospitalization. They control the amount of medical care and supplies used during hospitalization. If the doctors understand the fundamentals of prepaid medical care, they can do much to prevent over utilization. If they understand that payment of the last dollar of the expense of medical care is more important to the patient than the payment of the first dollar, they can do much to promote the development of major medical plans and sell the insuring public on the principles of deductibles and coinsurance which are so necessary in the cost control of these plans. Again, if they appreciate the safeguards which must be established, they can

do much to make possible the sale of contracts covering diagnostic procedures—an area which is of prime importance in the health care of the nation and which can do much to reduce long periods of hospitalization and major surgery.

One of the problems needing study with an open mind is the question of fee schedules. In the Blue Shield Plans where the contracts are on a service basis and where the service income limits are being increased to substantial amounts (for example, providing full service for any subscriber whose income is less than $6000 or $7500) this presents a real problem because the doctors must accept the amount provided in the fee schedule as full payment for their services. Naturally, they are inclined to set the fees on the high side which will of necessity increase the premiums. Furthermore, each specialty group is likely to think that the other fellow is getting more than his share in the fee schedule. The general practitioner thinks so of the surgeon, the surgeon of the neurologist, the neurologist of the anesthetist, and the anesthetist of the general practitioner. So, the cycle is completed and each one needs a psychiatrist; so, the psychiatrist ends up with the best fee of all.

The problems of establishing a fee schedule are not limited to the service benefit type of contract. They are present in the indemnity contracts. Here again the fees must be fair and equitable for the various services rendered. In some cases the doctors are willing to accept the fee schedule of Blue Shield for a certain procedure for a patient in a certain income bracket, but are not willing to accept this same fee under similar circumstances from an insurance company indemnity policy. This may have a tendency to increase fee schedules in the indemnity contract with a corresponding increase in premiums, thus making it more difficult for the insurance companies to compete with Blue Shield plans.

Moreover, the doctors fear that the fee schedules of the insurance company indemnity contracts may eventually fix their maximum fees. At a recent meeting of a group of doctors, one spoke seriously on the question of the regimentation of the medical profession. He listed the various forms of regimentation in the order in which he feared them most. First came regimentation through the practice of medicine by hospitals or other corporations; next, regimentation by insurance companies; next, regimentation through the federal government by means of socialized medicine; and finally, as the best solution to the problem—self regimentation. Note that the insurance companies have the dubious honor of being placed ahead of socialized medicine in the list of dangerous trends.

There is ample assurance that these principles of deductible, coinsurance, diagnostic coverage, and reasonable fee schedules will work in practice because in my company we have a self-administered employee medical care plan. We do not write sickness and accident insurance but we have been over the years pretty closely exposed to its problems. Furthermore, we have in our employ medical directors who can direct and control the plan.

Briefly, it provides coverage, including diagnosis, both in and out of the hospital. There is a modest first dollar deductible applicable to each employee or dependent who receives benefits in or out of the hospital during a calendar year. After the deductible is paid, the company pays the next $500 of hospital, surgical or medical benefits in accordance with a fee schedule which is discussed with the patient and the doctor before service is rendered if possible. Then, after the payment of a varying corridor deductible on a family basis for the calendar year in which benefits are received, a major medical benefit comes into play.

I realize that this is a well-controlled group since the employee is examined before he is hired and must have an annual physical examination if his coverage is to be continued, but I believe the key to the success of our plan lies in the cooperation which our medical directors have been able to obtain from our local doctors.

Be diligent as professional ambassadors to help the members of the medical profession find the answers to these six questions—What, Why, When, How, Where, and Who.

In a broader sense we are all interested in the answers to these six questions and in exercising tolerance in discovering these answers.

Picture if you will a delicate and accurate balance scale similar to those used by the doctor in days past who compounded his own prescriptions. Picture tolerance as the arm of this balance scale. The weight on one side of the scale cannot be changed without affecting the other side. Let us look at a number of combinations for the two sides of the scale which must be kept in proper balance.

First, insurer and insured. Benefits must be reasonable from the standpoint of the insured and the premium must be reasonable from the standpoint of the insurer. If either gets out of balance, someone is sure to suffer until the balance is reached again.

Second, employer and employee. Again we can say that benefits must be reasonable for the employee and the cost reasonable for the employer. There has been a tendency on the part of the unions to push for substantially increased welfare benefits, and so far the unions have been reluctant to recognize the deductible principle. If this stepping up of benefits with the corresponding increase in cost continues, it simply means that this cost will eventually be reflected in less take home pay for the employees or reflected in the third combination in the balance scale—producer and consumer—the cost being passed on to the consumer or the profit of the producer substantially reduced.

We each find ourselves in one or more of these combinations. Probably we are on both sides of the first one since we are working for insurers and are probably all insured. We are to some extent on both sides of the second one since we are all employees of the various corporations for which we work, but we are in management so we are cognizant of the problems of the employer. Certainly we are on both sides of the third combination—producer and consumer. We are all consumers and certainly we would all like to believe that we are also producers.

If we want to carry this concept a little further, and perhaps get a little more into abstract, our next combination could well be security and opportunity. Security has been much in the air recently. In fact, these health care plans that we are talking about are really prepaid security, and security is certainly a desirable thing to attain to a reasonable degree. However, if security is attained at the expense of opportunity, then eventually security will be more costly than is warranted.

The final pair of the combination follow closely security and opportunity. They are authority and responsibility. Every individual, group, or corporation which is given a certain amount of authority also must assume a certain amount of responsibility; and, conversely, responsibility cannot be properly carried out unless the person charged with that responsibility has a certain amount of authority.

So I would suggest to you today that you pause for a minute in your busy lives and look at this problem of tolerance. Sam Walter Foss, an American poet and journalist, with a journalistic career on the *Boston Globe* and the *Christian Science Monitor* wrote a number of published poems, among which was one entitled "The House By the Side of the Road." I would recommend to each of you that you pause in your house by the side of the road and follow the admonitions of Sam Walter Foss:

> Let me live in my house by the side of the road
> As the race of men go by.
> They are good; they are bad.
> They are weak; they are strong.
> Wise; foolish—so am I.
> So why should I sit in the scorner's seat
> Or hurl the cynic's ban.
> Let me live in my house by the side of the road,
> And be a friend of man.

Tolerance, gentlemen, is the most needed ingredient in the prescription for today's economy.

DR. SIMMONS—Thank you, Mr. Irwin.

Inasmuch as the several papers of the morning will be treated as a unit, I will suggest that there be no discussion of the individual papers, but that we withhold discussion until the morning program is complete.

Since Dr. Filson has worked quite closely with the next three speakers in the preparation and correlation of the material to be presented, I have asked Dr. Filson to introduce these speakers. Dr. Filson, will you come to the rostrum?

DR. RALPH M. FILSON—I feel that the Accident and Health phases of our insurance business deserve increasing degrees of understanding, and here I will pause, because I believe that that one word embodies basic elements wtihout which there can be no effective superstructure. *Understanding,* according to my interpretation, comes only from study, and so we might say that our Accident and Health business deserves increasing degrees of study, of support, and of explanation of the purposes and problems from every member of this Association.

Executives of insurance companies spare no effort to build new, improved, and more comprehensive protection. They create and support organizations like the Health Insurance Council, in which this Association has membership, and the newly established Health Association of America. Members of the medical profession have a large interest in understanding and cooperating in these efforts.

The complete story cannot be told at this meeting but certain of its illustrative points can be brought out. Two important newer attempts to meet expressed public needs will be discussed. These lie in the realm of major medical insurance and noncancellable guaranteed renewable Accident and Health coverages.

As our program indicates we are to have three additional speakers. Each one will deal with a specific subject related to Accident and Health business, but these will be closely integrated.

The first speaker is a graduate of the University of Pennsylvania, who commenced his insurance career with the Pennsylvania Mutual Life Insurance Company. He has had a widely varied experience within the insurance business. He served as General Manager in the Insurance Department of one of the country's largest states. He was responsible for constructive broadening of interests and functions of the Bureau of Accident and Health Underwriters. He has contributed notably in drafting both industry regulatory measures and legislative enactments affecting the insurance industry. His extensive writings cover various phases of the Accident and Health business and has been a Visiting Lecturer on these subjects at the University of Connecticut, New York University and the University of South Carolina. Among his personal interests, proving his versatility, are music and the drama. He has composed two symphonic works that have been presented by the Philadelphia Symphony Orchestra, and he is a member of the American Federation of Musicians.

He was appointed Director of Information and Research of the Health Insurance Association this year. I am delighted to introduce Mr. Joseph F. Follmann, Jr., who will talk on "Major Medical Expense Insurance—Its Development and Problems." Mr. Follmann.

# MAJOR MEDICAL EXPENSE INSURANCE—ITS DEVELOPMENT AND PROBLEMS

Joseph F. Follmann, Jr., New Rochelle, N. Y.

In the fourth act of "Julius Caesar," Shakespeare gives to Brutus these lines to speak:

> There is a tide in the affairs of men
> Which, taken at the flood, leads on to fortune;
> Omitted, all the voyage of their life
> Is bound in shallows and in miseries.
> On such a full sea are we now afloat;
> And we must take the current when it serves,
> Or lose our ventures.

There are perhaps no lines from all literature which could more aptly describe the challenge which faces the institution of private health insurance today than these.

Before entering upon a discussion of major medical expense insurance, it might be well to examine briefly the socio-politico-economic climate in which we live today, the rapid evolution proceeding in the field of medical care, and some of the more recent past in the field of accident and health insurance. It is submitted that such a brief examination will be helpful so that we might have before us the panorama against which major medical expense insurance stands in bas-relief and so that we might more readily grasp how and why this form of insurance has logically evolved.

## Socio-Political Background

The health of a people is considered today, both in the United States and in most of the nations of the world, a matter for governmental and social concern. Included in this consideration are the broad areas of preservation of health, prevention of accidents and illnesses, provision for adequate medical care for all, and rehabilitation of those who become stricken.

An important segment of this broad consideration is the problem of financing the costs of medical care. It is with respect to this segment, as well as the problem of continuing a reasonable portion of earned income during periods of disability, that private voluntary health insurance is concerned. This is not to say that private voluntary insurance does not have an interest in all other segments of the general subject. Contra, the preservation of health, the prevention of accidents and illnesses, the nature, quality, and cost of medical care and facilities, and the rehabilitation of the disabled are all matters of vital interest, as are the roles played or proposed by goverment. However, they are matters which primarily lie in other domains. Hence attention is directed here to the subject of financing the costs of medical care as this relates to the private insurance mechanism.*

The costs of medical care are generally borne in one, or a combination, of the following nine ways:

1. Use of personal funds from income, savings, investments, or holdings.†
2. Insurance policy benefits or prepayment plans.
3. By the employer.
4. By labor, fraternal or other organizations.
5. Personal loan.
6. Funds provided by relatives or friends.
7. Charitable institutions.
8. Care or treatment without charge.
9. Government.

In many other countries, government plays a more direct role in financing medical care than in our own. By January 1954, 41 nations had compulsory health and maternity insurance programs‡ and 3 had voluntary subsidized programs with broad coverage.§ Additionally, one nation offers medical and dental services in special centers built with social insurance funds (but does not provide cash benefits) and three provide for maternity insurance but not health insurance. Many of these programs have progenitors dating back many years, the earliest being Germany, 1883 (latest enactment 1952). Five have come into operation since 1949 and four are not yet in operation. Thirty-two are presently operating under laws enacted since the cessation of World War II.

It will be noted that government programs concerned with financing medical care on a more or less universal basis are not new in concept. They are devoid, it is also to be noted, of any identification with any particular political ideology, form of government, degree of economic control or freedom, or

Director of Information and Research, Health Insurance Association of America.

*Other forms of private insurance play an important role in protecting against the financial consequences of illness and injury including life insurance, annuities, total and permanent disability and accidental death benefits written in conjunction with life insurance, workmen's compensation insurance, liability insurance, and medical payments benefits written in conjunction with liability insurance.

†Including life insurance surrender and loan values, proceeds from life insurance, annuities, retirement programs, and Old Age Survivor's Insurance benefits.

‡Included in the 41 are Australia, Austria, Belgium, Brazil, Denmark, France, Germany, Great Britain, India, Italy, Mexico, Netherlands, New Zealand, Norway, Spain, Sweden, and Turkey. Also included are China (both Nationalist and Communist), Czechoslovakia, Hungary, Poland, Rumania, the Union of Soviet Socialist Republics, and Yugoslavia.

§The three nations are Australia (employs both approaches), Finland, and Switzerland.

economic, social, or cultural level. Notably absent from any of the various categories of government programs mentioned is the United States.

This is not to say that government in the United States has evinced no concern over the financial consequences of illness and injury. Contra, all forms of our government have displayed an active, continuing, and increasing interest. Through workmen's compensation laws enacted since 1911, all the states and the federal government (longshoremen and harbor workers and District of Columbia) have placed certain fixed responsibilities upon the employer for the costs of occupational accidents. In 41 states this responsibility can be insured with private insurance carriers, in 11 of these in competition with a state fund. In seven states private carriers are excluded by monopolistic state funds.

In four states nonoccupational statutory disability benefit laws have been enacted since 1942. These laws generally provide cash benefits to covered employees for a limited period of time during disability. California additionally provides for fixed per diem hospital benefits up to a specified maximum. With the exception of New York, these laws are linked to unemployment compensation benefit laws. In one, Rhode Island, private carriers cannot participate in providing the coverage. In the other three, California, New Jersey, and New York, insurance companies can, to varying degrees, compete with the state fund. In those states the companies write 48%, 64%, and 97% of the covered employees respectively. Essentially similar measures have been introduced in 15 other states, the District of Columbia, and Hawaii but were not enacted into law.

Between 1939 and the present, bills directly concerned with some form of generally universal health insurance have been introduced into every session of Congress. These bills have run the gamut from bills which would have provided practically universal coverage under federal administration, to bills which would provide government reinsurance for private health insurance plans. They have included such proposals as federally subsidized state systems of medical care and disability compensation, provision for practically universal medical and hospital care including periodic physical examinations from birth to death and relieving income loss resulting from disability, appropriation of federal funds to enable the states to provide medical care for the "medically indigent," promotion of "cooperating prepayment health service plans" through federal-state subsidization, old age survivor's insurance benefits to the totally disabled, and provision for smaller insurers to pool their operations and experience. Until this year none of the proposals were enacted. This year, as is generally known, a bill was enacted to provide OASI benefits to totally and permanently disabled old age survivor's insurance beneficiaries over 50 years of age.

During this same period several important studies were conducted by the federal government. Outstanding were those of the Committee on the Costs of Medical Care appointed by President Hoover, the National Health Survey, that of the National Health Conference appointed by President Roosevelt, the Clark Report prepared at the instance of the Subcommittee on Health of the U. S. Senate Committee on Labor and Public Welfare, and the report of the President's Committee on the Health Needs of the Nation appointed by President Truman. In 1956 Congress enacted a measure to provide for a National Health Survey on a continuing basis.

In addition to the approaches and proposals of more direct significance to private insurance, there are many governmental services at the federal, state, and local level which make provision for medical care, serve to prevent disease and illness, and aid in the rehabilitation of the disabled. Hence 24% of the total $14 billion medical bill of the nation is borne by these various governments, often on a joint financing basis.* The federal government in 1955 spent some $2 billion on disability allowances, $1.7 billion for operational services, $199 million for federal hospital construction, and $207 million for grants, of which $75 million were under the Hill-Burton Act and $41 million for research.† Seventy-one per cent of all hospital beds in 1949 were furnished by government, although their use accounted for only 25.6% of hospital admissions.

The federal government has undertaken a large measure of responsibility with respect to the entire population and specific responsibility for all or part of the medical care of over 30 million persons (not including totally and permanently disabled old age survivor's insurance beneficiaries over age 50 now eligible but whose numbers are not yet known). About 4 million are entitled to complete medical care. These include active duty military personnel, indigent Indians, Merchant Seamen, Coast Guard personnel, federal prisoners, detained aliens, drug addicts, lepers, and others. Additionally, 3.5 million veterans are entitled to complete care for service connected disabilities. Over 20 million are eligible on a facilities available basis, these being mostly veterans, dependents of military personnel, and retired military personnel. Ten per cent of all active physicians, 9% of dentists, and 6% of graduate nurses are employed by the federal government. In 1953 $152 million of medical supplies were purchased by the federal government.‡

Under the Hill-Burton Hospital Survey and Construction Act federal funds have been granted to assist in the construction of hospitals, health care facilities for the chronically ill, nursing and convalescent homes, diagnostic and treatment centers, and centers for rehabilitation. This program, now 10

*U. S. Department of Commerce.
†Commission on Organization of the Executive Branch of the Government.
‡Ibid.

years old, has 3,047 project approvals to its credit at an aggregate cost of $2.4 billion of which $781.4 million was federal funds.

The various governments in the United States have provided grants to aid the education of medical and public health personnel; public assistance medical care; vocational rehabilitation; prevention of disease and accidents by such means as pure food and drug administration, water and air pollution control, vectal control, detection and control of mental disease, diagnosis, detection and control of physical disease, communicable disease control, nutrition, accident prevention, occupational health and safety services, garbage collection and disposal, school health services, educational media, and grants for research; services for mothers and crippled children; aid to the blind, the aged, dependent children, and persons totally and permanently disabled; construction of hospitals and other medical care facilities; public health medical nursing and dental services; and licensure.

This brief resume of government approaches to the problem of medical care and its financing serves to illustrate the socio-political background against which private insurance in this country functions today. It would seem to indicate rather clearly that, to the degree nongovernmental means cannot or do not provide for the costs of medical care, government is prepared to assume* or designate† the responsibility to the end that there shall be adequate medical care for all.

### Evolution in the Provision of Medical Care and in Medical Economics

There is another area of the panorama which has marked effect upon the provision and cost of medical care and its financing and which is equally of concern to private health insurance—that is, the rapid evolution proceeding in the provision of medical care and in the economics of its financing. This evolution has proceeded at an unprecedented pace in recent years. It has had, and is having, marked effect on the cost of medical care, the nature of medical care, the attitude of the public toward medical care, and political opinions and attitudes. Its effect on private voluntary health insurance is great, although not yet measurable, so rapid has been the pace.

There is more and better medical care today. It is more readily available to more people. More people take advantage of this care than ever before and life is prolonged as a result. But medical care has become more complex. It becomes increasingly costly as more and more facilities are brought into common usage and more expensive procedures and drugs are developed. The problem of financing this cost becomes increasingly difficult to many. It falls upon private health insurance to provide the means for spreading, for averaging out, these costs.

The U. S. Department of Commerce reports that in 1954, $14 billion was spent in the United States for health and medical care. Of this, consumer expenditures represented 76% and government 24%. Of the $10.6 billion spent by consumers, privately controlled hospitals and physicians' services comprised 54%, net cost of insurance 10%, dental care 9%, other professional services 6%, and commodities 21%. Health Information Foundation estimates that this cost to the American family averaged $207 in 1953; although 11% of the families surveyed experienced charges in excess of $500, these 11% accounted for 43% of all charges for personal health services. Seven per cent of the people saw physicians at least 15 times during the year. These costs fall heavily upon some persons.

Today one out of eight persons in the United States is hospitalized each year. Hospital utilization in 1955 reached a new high of 21,072,521 patients, this being an increase of 3.5% over the preceding year. Meanwhile the cost per patient day rose to an average of $24.15, an increase of 6% over 1954; and the average total hospital bill increased 5.92% to $181.13. A decennial comparison shows that since 1946 the average cost per patient day has risen from $10.04 to $24.15, an increase of 141%; and the average total hospital bill has increased from $88.35 to $181.13, an increase of 105%.‡ It is forecast that hospital costs will continue to increase at about 5% annually for the indefinite future.§

The average length of stay in general short term hospitals has dropped, however, from 40 days in 1900 to 14 days in 1934, to 8.1 days in 1947, to 7.8 days in 1955.

These scant figures on hospital costs illustrate many of the evolutionary factors which have been at work. They, of course, show the effect of an inflating and expanding economy, but while the consumers' price index rose 37.6%, the hospital cost per patient day increased 132%. They display the increased use of skilled professional personnel in hospitals resulting from swifter and more highly developed treatment. They display reduced hours of hospital work in order to compete in the labor market. They represent an increase in the quantity and quality of hospital services per patient day as a result of the technical and scientific progress being made in medicine. The personnel required for one patient day of care has grown over 24% in the past nine years: the number of routine nursing procedures per patient day has increased 30%. The increasing complexity of hospital service is also illustrated by the increase in the past nine years of the average total capital assets of all short term, general hospitals required per bed, an increase from $6,512

*Directly, through taxation; indirectly through compulsory employer-employee contribution; or both.

†Usually the employer.

‡Employee Benefit Plan Review, September, 1956.

§Ray E. Brown, Journal of the A. H. A., April 1, 1956.

to $11,170. These figures also illustrate the fact that the shorter the patient's stay, the more intensive is the treatment required, in that such costs as operating room and x-ray are spread over fewer days. Also displayed is the use of more varied and expensive drugs, equipment, and procedures.

The hospital admission figures are also reflective of certain basic factors. One of these is the increase in our population. With an increase of over 4 million last year due to live births alone, the continuing effect of our population increase will be felt for a long time to come in the field of medical care as well as many other fields. Another factor made evident by these figures is the increasing availability of hospital care, made possible by improved transportation and hospital construction programs, and the changing public attitude toward hospital care, with decreasing fear and ignorance being in the ascendancy. Also reflected are the effects of our general economic well-being and of the phenomenal growth of private voluntary health insurance.

These figures are mentioned here for another reason: They illustrate the marked effect the changes in medical care are having and will have on the financing of medical care, including the underwriting of insurance. This, in turn, indicates the demand for further evolution in certain directions to the end that lower cost facilities and methods, though just as adequate, will come into more general usage. This continuing evolution must come about if present developing methods of financing medical care on a private and voluntary basis are to continue.

Some of the changes underway are the design and creation of facilities more nearly related to the degree of illness; the further development and coordination of nursing and convalescent homes and outpatient care; more ambulatory and self-service hospital care; the substitution of less skilled hospital personnel to take over the lesser skilled duties from the professional personnel; synchronization of hospital patient admissions with discharges to reduce to a minimum the loss of bed days; location of hospitals closer to the population they serve and the building of more but smaller hospitals on an interrelated basis; the development or grouping of more specialized treatment; organization and development of home care, nursing service, homemaker service, and "meals on wheels"; the development of diagnostic, therapeutic, and rehabilitation centers; and the development of relative value schedules for medical services as was recently done in California. These changes, properly brought about, can serve to place medical service in this country on a still higher plane while at the same time keeping its increasing costs within control.

With all this change surrounding the providing of medical care and its cost, there has been equally sudden change with respect to the manner in which this cost is borne. Private contribution to hospital construction and deficit is no longer available on its former scale.* Replacing this in part has come government grant.

Charity or nonpaying patients of hospitals and physicians, while reduced in number, are no longer chargeable at the other end of the spectrum to the extent they one time were. There is little question but that prepayment and insurance methods have provided the beginnings of a sound financial base for all health services in our country. Today about half the income of our general hospitals, for instance, is estimated to be derived directly from these means.† If the use of 'not known' insurance funds was added to this, the proportion would be much greater.

A survey conducted for Health Information Foundation shows that 19% of all American family medical charges was paid by insurance in 1953. Spokesmen for the government have recently stated critically that only 22% of the $10.6 billion personal medical care expenditure was covered by insurance. These figures, of course, bear critical and current analysis. The purpose here is to indicate generally the role prepayment methods have come to assume.

It can be seen from this brief account of the evolution going on in the field of medical care and medical economics that marked affects are being produced on the problem of financing medical care. Medical care, with its tremendous advance, has become increasingly expensive. Means for using the least expensive care possible, commensurate with medical adequacy will have to be exploited to the fullest. Meanwhile insurance and prepayment methods will have to continue, or even accelerate, their phenomenal development.

Hence we, as private insurers, find ourselves in a climate of a general social concept that no one shall lack for adequate medical care; of strong and active socio-political forces moving in the direction governmental provsion for the costs of medical care; of a rapidly evolving form of medical care involving increasingly expensive technics and facilities; of an evolving pattern of medical economics tending away from extremes in the direction of a more level allocation of the costs of care; of a personal tax structure which makes the accumulation of savings against the cost of emergencies more difficult; and of a changed personal economy in the direction of more total consumption of earned income, installment purchases, and a resultant higher percentage of indebtedness.

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*The U. S. Department of Commerce has reported that in 1954 patient income, including amounts paid direct by insurance plans, equalled 90% of the income of nonprofit short term general and specific hospitals. The remainder came from gifts, bequests, and grants.

†Ray E. Brown, Ibid.

### The Response of Private Insurance

The private insurance mechanism has not been unaware of the challenge with which it is faced. Rather, it has been vibrant with development and experiment. As a financial institution, however, it has had to progress logically and with a certain caution and alertness to the consequences of unforeseen hazards. This is befitting the important and long range responsibility which it, of necessity, assumes.

The fact that the coverage provided by insurance companies has been increasingly effective and adequate cannot be questioned by any reasonable person. Developments and improvements have been appreciable. Experiment in new approaches has been vital and varied. These developments have been brought about by insurance companies individually and voluntarily. The benefits of a free competitive system, prevalent in accident and health insurance, have accrued directly to the insuring public. Entire new coverages have come into being, more traditional coverages have been broadened and often reconceived, coverages have been redesigned to meet the current needs and demands of the public, underwriting principles have been revised, practices and methods have been altered. To mention a few: the conversion privilege and continuation of coverage on retired employees in group insurance, the introduction and growing acceptance of deductibles and coinsurance, guaranteed renewable insurance with the right of the company to change the premiums, an increase in the writing of noncancellable insurance*, reduced and unlevel commissions, increased age limits for the writing and continuation of hospital expense insurance, the development of paid up insurance, the writing of substandard risks, increased reinsurance facilities, the development of small group insurance and generally an extension of the group underwriting principles, extension of coverage to medical services and forms of care not formerly covered, the extension of limits to cover longer hospital stays, and extensions of medical care benefits to more realistic levels.

In addition to these, a most important development has been the entrance into the field of health insurance of a great many companies which did not formerly write this form of insurance or which wrote it on a limited or restricted basis, and the entrance into the field of medical care coverages by companies long writers of the more traditional forms of coverages.

In giving consideration to the effectiveness of insurance company coverages in financing medical costs it must be recognized that generally and traditionally they have been directed more particularly to the short term patient and to the more fundamental or basic medical care costs possessed of clearer identity such as hospital, surgical, and in-hospital medical costs. Effort and experiment has been directed toward increasing the level of these benefits and increasing the number of specific areas for which reimbursement would be made. As a result the amounts of benefits generally written today for the traditional hospital, surgical, and medical expense appear quite adequate for the purposes intended.†

They have certain limitations, however. They, unlike the policyholder's problems, are segmented by types of expense; are usually limited to in-hospital expense‡; often do not cover the costs of private nurses, specialists and consultants, and medical supplies and appliances; often provide too much coverage for minor ills of little financial consequence and too little for major illnesses; and often bring about duplication of coverage and overinsurance.§

This is not to say they do not serve an important role in financing medical care costs. They have, in fact, come to play an increasingly important role and one which is generally recognized. They ease the financial shock in whole or in part in the vast majority of illnesses and accidents where insurance is in force and where hospitalization is required. As they have developed in a natural, evolutionary way they have served and do serve the American public well. It may well turn out that they provide the type of protection which the public will see fit to prefer. Time and the public will be the deciding factors.

### Major Medical Expense and Comprehensive Insurance

It was out of the recognition of these understandable and inherent limitations in the more traditional forms of medical care insurance coverages, however,

*The number of companies offering this form of coverage increased from 67 to 107 between 1950 and 1955. Source: Argus Chart.

†A 1955 joint Bureau-Conference survey reveals the following averages: Maximum daily hospital benefit, $15; Number of days covered, 107; Miscellaneous benefits, 10 times the daily benefit; Surgical maximum, $290; In-hospital doctor visits, $3; In-hospital private duty nurse, $10. Group insurance benefits are comparable.

‡It is estimated that nonhospitalized illness accounts for more than half the funds now privately expended for medical care. Emil E. Brill, General American Life Insurance Company, before the National Conference of Health and Welfare Funds Administrators and Trustees, June, 1956.

§Ibid. See also Donald D. Cody, New York Life Insurance Company, before the Illinois Wesleyan University Second Annual Insurance Seminar, April, 1956; John L. Garman, Connecticut General Life Insurance Company, before the Bureau of Accident and Health Underwriters and the Health and Accident Underwriters Conference, January, 1956; A. M. Wilson, Liberty Mutual Insurance Company, Edmund B. Whittaker, The Prudential Insurance Company of America, and Henry S. Beers, Aetna Life Insurance Company in "Major Medical Expense Insurance", Chamber of Commerce of the United States, 1956; the report of the President's Committee on the Health Needs of the Nation, 1952; and President Eisenhower's message to Congress, January 31, 1955.

that the conception and development of major medical expense and comprehensive insurances came about.

Secretary Folsom of the U. S. Department of Health, Education and Welfare has recently said, "One of the greatest needs and opportunities lies in the field of major medical expense insurance. . . . We must remember that in 1953 alone half a million families had medical care costs as large or larger than their entire annual income. One million families had illnesses costing more than half their annual income. . . . I believe firmly that major medical expense coverage should be used to supplement the protection afforded by basic benefits of many existing policies."

There is no need to describe here in detail the major medical or comprehensive coverages, nor to enter into discussion of the diverse forms and variations these coverages presently assume. An appreciable body of current literature is extant on the subject and so much has been written and spoken recently that any lengthy discussion would be redundant. Suffice to say that under this form of coverage, insurance is generally provided for practically all forms of medical expense in or out of the hospital. This includes charges for hospitalization, physicians, private registered nurses, surgery, physiotherapy treatments, x-ray and radium treatment, x-ray and laboratory examinations, ambulance, prescription drugs, medicines, blood, appliances, care for accidental injuries to natural teeth, and maternity complications. Generally not covered are expenses covered by Workmen's Compensation; expenses for eye refractions and glasses, hearing aids, dental care not required as a result of accident, check-up examinations, and luxury hospital accommodations; charges in government hospitals; charges resulting from war; and normal maternity expenses. Some policies also exclude expenses resulting from nervous ailments, care in nursing homes, insanity, alcoholism, and narcoticism. Some individual and family policies are limited to in-hospital expenses. Underlying all such plans today is a deductible amount,* a coinsurance feature,† and a maximum amount of benefit.‡ Still being in many respects experimental, these underlying principles vary among companies. Hence, there are "corridor" deductibles, "benefit year" deductibles, "each illness" deductibles, "integrated" deductibles, "each individual" deductibles, varying amounts of coinsurance, varying maximum limit amounts, and varying methods for applying these maximum limits, including on an "each illness" basis, an "each individual" basis, and a "lifetime" basis.

It will be seen from this very brief description that an entirely new concept has evolved with respect to the costs of medical care. The earlier and traditional segmented approach has been supplanted by a blanket approach.

More recently, being aware of the problems of deductibles as they effect particularly the lower income groups, companies have been experimenting with a still newer version of group major medical expense coverage. This coverage is variously referred to as "Comprehensive," "Minor-Major Medical," "Basic and Catastrophic," and "Baby-Major Medical." Some of its features are such things as lower deductibles§, a reduced amount of coinsurance,‖ no deductible for hospital expenses, full reimbursement of the first $250 of hospital expense, and a higher rate of reimbursement for hospital and surgical expenses than for other medical expenses. This is the most complete coverage ever offered by insurance companies for medical expenses.¶

With respect to these newer coverages a review of the experience of one company is of interest. This shows that of 350 group cases sold in 1955 and early 1956, about 90% were on the comprehensive rather than the in-hospital plan. Almost all had 25% coinsurance although a few had 20%. About 15% supplemented Blue Cross–Blue Shield basic plans and over 80% supplemented basic plans written by the same company. Three per cent of the cases replaced a basic plan.#

Today these coverages are written on a group basis by some** 98 companies and on an individual and family basis by some 77 companies. At the end of 1955, 5,300,000 persons in the United States were covered by major medical expense insurance. The rate of growth in 1955 over 1954 was 140.9%. The number of persons covered in 1955 compared with 1953 was 224.2% greater. There is no means of estimating the number of persons presently so insured. Rates of growth so marked as those demonstrated defy future projection with anything resembling accuracy. In addition to this, the sudden insuring of any large group of persons can alter the figures appreciably. For example, had the bill before Congress this year which would have made possible the insurance of civilian federal employees on a major medical expense insurance group basis been enacted, several million persons could possibly have been added to the total insured in a very short period of time. Such marked change can also be brought about by the inclusion of major medical or comprehensive coverage in a labor union bargaining agreement.

*Varying from $100 to $500.

†Generally 25%.

‡Usually ranging from $2,500 to $10,000.

§Often $50.

‖Often 20%.

¶A possible exception might be the blanket medical expense coverage written for both accident and illness losses in the late 1920's. The experience here with respect to illness losses was too costly and the coverage had to be generally discontinued.

#Employee Benefit Plan Review, July 1956.

**It is difficult to obtain an accurate count.

These more recent developments present to the American public these decided advantages: (1) protection against sizeable and unpredictable medical bills, (2) protection against the costs of the vast majority and more usual of the forms of modern medical care, (3) the broadest coverage for a given premium by the elimination of budgetable expenses and by providing an incentive to select the most appropriate type of care, and (4) removal of the need for duplicate or supplemental coverage.

There can be little doubt but that further developments will continue to come about. This form of insurance protection has by no means solidified nor will experimentation cease until further refinements are brought about. The end, certainly, is not yet in sight.

### Some Areas For Consideration

Major medical expense insurance and comprehensive medical care coverages are still incomplete and certain fields are open for further consideration.

It must be constantly borne in mind that these forms of insurance are relatively quite new. A pattern has not yet formed, with the consequence that plans invariably differ, often in important detail. In itself this is a most healthy condition, since insurers are still finding their way, gradually gaining more experience and knowledge. Changes in approach are constantly being made. Experiment proceeds continuously. Trial and error are often the teachers.

Some of the more salient areas for further consideration are the following:

1. The development of an understanding attitude on the part of the providers of medical care. It is generally recognized that this form of insurance cannot succeed without the understanding cooperation of the doctors, the hospitals, and all the others who provide such a high level of medical care for the American public. Doctors and hospital administrators are evidencing increasing awareness of the close relationship which they have with the insurance mechanism. This is a most encouraging and hopeful sign, for upon this awareness will depend, in large measure, the success of this newest of insurance coverages.

There is little question but that major medical and comprehensive insurance can result in a higher fee-paying ability of the patient. It can result in the use of unnecessary or luxury forms of facilities and care. It can result in the overutilization of medical facilities and, consequently, of the insurance. Any of these consequences are undesirable since they can place unnecessary demands upon doctors, nurses, and medical facilities, they can unnecessarily increase the cost of medical care, and they can bring about the increased cost of insurance protection which, if carried to an extreme, could mean the failure of the prepayment or private insurance concept of financing medical care. The remarks of others will shed a great deal of light on the many elements which make up this problem, the difficulty in coming to grips with it, and the misunderstandings which often pervade any approach to the subject.

The principle of coinsurance is being used to give to the policyholder patient a share in the medical costs and hence an incentive to keep those costs at reasonable levels. However, the providers of medical care, with their close subjective relationship with the policy holder patient, are the ones who will determine, eventually, the success or failure of this new coverage.

One of the hopes for major medical expense insurance is that it will discourage the unnecessary use of expensive hospital facilities. Doctors and hospitals have been critical of the more traditional forms of insurance and prepayment because the benefits are often limited to in-hospitals costs and hence bring about the unnecessary use of these facilities when less expensive means would have been sufficient. Major medical insurance, in removing the in-hospital concept, overcomes this criticism. The providers of medical care, on the other hand, must take advantage of this more flexible approach by using less costly facilities where these are just as adequate. This hope cannot be realized without their understanding and cooperation. It argues for close liaison between those concerned with medical care and those concerned with insurance to the end that the public interest might best be served.

Another hope for major medical and comprehensive insurance is that it will avoid duplication of coverage. The providers of medical care are quite critical of insurance and prepayment methods when they observe duplicate coverage resulting in overinsurance. Particularly when they have based their charges on certain assumptions, only to find out later that the patient actually made money on his illness, do they feel critical of the insurance and prepayment mechanisms. Insurance companies are well aware of this problem. The fault has partially, though unpurposefully, been theirs in packaging their coverages so that the public feels the need for more than one kind of coverage, in insuring already insured dependents, and in not too carefully underwriting their business. Steps are being taken to overcome this with full recognition of the fact that it results in unnecessary and wasteful insurance cost to the public, unsound insurance practice, and unsatisfactory relationships with the medical profession. It cannot be overcome at once, however, nor can it ever be completely eliminated; particularly in the instance of fraudulently minded policyholders. It is hoped, however, that the advancement of major medical and comprehensive coverages will provide the major step in overcoming this problem.

As members of the medical profession and as medical directors of insurance companies you are in a key position to bring about increased under-

standing and cooperation between the providers of medical care and the insurance companies. Your counsel, your understanding of both segments of the subject, can be of inestimable assistance in bringing about a common understanding of the mutual problem. Where medical directors have come to play an active role in this respect, the results have been most rewarding. But a relatively few doctors are not enough. All of you are needed, needed to talk with groups of doctors and hospital administrators, to help them understand what private insurance is trying to do, to gain an understanding of their problems and to convey these to the insurance lay mind, to accomplish a joint and common enterprise in which the beneficiary will be the American public.

2. A second area for consideration is the development of a public understanding, and acceptance, of the principle of deductibles and coinsurance. The basic concept of what the public wants and needs as protection against the costs of medical care has not yet crystallized. Certain it is that the public has become accustomed to forms of protection which provide payment for small bills.* This means that evidence of the existence of the protection is more frequent, and hence more to the immediate liking. However, this results in high administrative costs, it means that bills are paid which are not of serious financial consequence and hence which could be handled by budgeting, it results in higher cost of protection if the costs of financially serious illnesses are also to be insured. Perhaps the public may choose this, nonetheless. It must be recognized that the public today is geared to an installment payment economy. Many of its decisions are consequently based upon this premise. However, the ultimate selection by the public should be based upon a sound understanding of the nature of the various forms of insurance available to it and the elements which enter into their costs. In the instance of automobile collision insurance, once aware of those factors, the public clearly showed a preference for the deductible approach.

It must be recognized, also, that the development of public acceptance while basically an individual matter, is not entirely so. The development of public acceptance will affect labor union bargaining. It will affect the attitude of employers in the purchase of group insurance. It will affect the attitude of public leaders, of those in public office, and of public opinion generally.

It is to be recognized that the insurance mechanism fulfills its primary function when it provides protection against the unusually high medical bill and not when used to prepay the cost of small, budgetable expenses.

*The experience of one insurance company reveals that 30% of its claims under traditional hospital and surgical insurance involved medical expenses of less than $25.

3. A third area for consideration is the continued experiment and development among private insurers. It has been demonstrated that major medical expense insurance is a developing process. Its variations are many. Eventually these will have to solidify in the best interest of the public. Before this can be done, however, a great deal has to be learned from research and from experience. Medical costs, their nature and their incidence, have to be examined, more about their subjective nature must be learned. Insurance experience, on an intercompany basis, would be helpful but varieties of coverages and approaches make this virtually impossible at this time. Attention must be paid to the rapid evolution proceeding in the fields of medical care and medical economics to be certain that insurance serves the public in the best possible manner. Examination of various approaches to claim costs control will become increasingly necessary as this form of insurance grows, in order to avoid unnecessary or unwarranted claims. Expenses surrounding the writing of insurance should be, and are, a constant source of study. Both these will result in keeping the cost of insurance to the public at a minimum. Hence the insurance process is, in many ways, a constant one of self-examination, of reevaluation, of resolving impressions into facts.

4. A final area for consideration is one which also lies with the insurance companies, that of education: education of the public, of those who employ others and hence are present or potential purchasers of group insurance, of those who provide or administer the various forms of medical care, and of insurance company personnel. Too little is known about major medical expense insurance; what its purposes are, how it functions, and how it fits into a personal insurance program as an integral and important part. A broad educational program can serve to bring about such an understanding, and hence to supplement the preceding areas of consideration. It can serve to create a public attitude which will make major medical expense insurance a sound and workable device.

## Conclusion

The development of major medical expense and comprehensive insurance is an important step forward in helping the American people meet the financial costs of medical care. As this form of protection becomes more widespread, sizeable medical bills will cease to be the financial and economic problem they are to millions of individuals today. It is the answer to the assertion that health insurance is not paying a large enough portion of the nation's health bill.

The insurance principles continued in the major medical approach are sound. The avoidance of smaller bills and utilization of the premium for large bills which might otherwise result in financial dis-

aster is the objective. Major medical insurance should prove to be an important contribution to the well-being and increased standard of living of the American people.

DR. FILSON: Our next speaker is one of our own members, a Yankee by birth and education and a native of Vermont. Having graduated from Holy Cross and from the University of Vermont Medical School in 1945, he became associated with the Medical Department of the Equitable Life Assurance Society as Assistant Medical Director in the Bureau of Selection. He was made Associate Medical Director in 1953, and for approximately three years now he has been directing and actively participating in a new program of activities with the Equitable. This program's purpose is one of furthering good medical public relations with policyholders, both individual and group, in accident and health coverage.

With this background, Dr. William J. McNamara is eminently qualified to speak to us, supplementing what Mr. Follmann has just told us and devoting his attention particularly to "The Role of the Medical Director in Major Medical Isurance." It is a real pleasure to introduce to the members of this Association Dr. William J. McNamara.

# THE ROLE OF THE MEDICAL DIRECTOR IN MAJOR MEDICAL EXPENSE INSURANCE

William J. McNamara, M.D., New York

Others have already described the development of this new type of insurance as a means of protection against medical, surgical, and hospital expenses which are not adequately covered by the usual health insurance plans.

The purpose of Major Medical Expense Insurance is to assist the American insurance buyer to meet the cost of expensive illnesses or accidents where expenses run to hundreds or even thousands of dollars. This form of health insurance affords real protection against the expenses of a medical or surgical catastrophe.

The number of persons who are procted by Major Medical Expense Insurance has about doubled each year since the inception of the insurance in 1949. According to The Health Insurance Council Report of August 1956: "Accelerated growth of Major Medical Expense protection during 1955 multiplied the number with such protection by nearly two and one-half times over 1954—the increase being 138%.

This growth should continue as the American public recognizes more and more the value of this form of insurance protection against extraordinary medical and surgical expenses. A large number of health insurance plans written in industry now include Major Medical Expense Insurance, and there is reason to expect growth of these plans in the future.

In spite of the fact that approximately 110,000,000 Americans are covered by various forms of health insurance, there is still need for greater protection among individuals who are not in employed groups if health insurance is to be provided to a larger proportion of the population.

Major Medical Expense Insurance has four distinct features:

(1) *A maximum limit* on benefits payable. This commonly ranges from $2,500 to $10,000.

(2) *A deductible provision.* This is similar to that found in most automobile collision policies. It not only eliminates small claims but helps to reduce administrative expense associated with them. Deductibles may range from $50 to $500.

(3) *Coinsurance.* This provides that the company reimburse the insured for only part—commonly 75% to 80%—of all expenses above the deductible amount, and that the policyholder pay the remainder of the bill. It is believed that, when the insured has to pay out of his own pocket a portion of each dollar of expense, he will be concerned with limiting his expenses to actual necessities, without luxuries. As a coinsurer he thus carries a portion of the risk himself. Coinsurance aids insurance companies to provide benefits when they are needed, while discouraging needless expenses.

(4) *The absence of a fee schedule.* For the medical director this feature gives rise to the most serious problems. Even though in many instances the insurance policy specifies that the charges must be "reasonable," "customary," "usual," or some similar term, decision as to whether a specific charge is rea-

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Dr. McNamara is now Medical Director, Bureau of Industrial Health, the Equitable Life Assurance Society of the United States.

sonable, customary, or usual can be most difficult and certainly demands professional assistance. On the other hand, if a fee schedule were imposed in Major Medical Expense Insurance, much of the value of this type of insurance might be lost. Within its deductible and coinsurance stipulations, Major Medical Expense Insurance is designed to protect against large expenses of illness, and imposition of a fee schedule which would limit benefits would, to a large extent, defeat the real purpose of this type of coverage.

Let us turn now to consideration of some of the specific problems of Major Medical Expense Insurance—problems whose solution is partially a responsibility of the medical department of the insurance company.

*First* is a brief summary of the medical underwriting of risks for this type of insurance. The principles involved in underwriting all forms of accident and health insurance are basically alike. In contrast with life insurance underwriting, however, we do not have the benefit of extensive medicoactuarial studies such as the Impairment Studies of 1914, 1929, and 1951. Nor do we have morbidity studies nearly as informative and reliable as vital statistics and clinical biostatistical studies relating to mortality. The distressing lack of exact information about the costs, prevalence, and related features of many types of illness was recognized by the 84th Congress when Public Law 652 was passed, establishing a National Health and Sickness Survey.

Although individual companies have their own accumulation of accident and sickness statistics, generally there has been no great pooling of insurance experience data from which fundamental conclusions may be drawn.

Certain observations nevertheless can be made. Not everyone who is eligible for accident insurance is eligible for sickness insurance, and one who is eligible for both of these coverages may not be acceptable for life insurance or vice versa. All possible combinations may be found.

The most common unit of Major Medical Expense coverage is the family. Occupations, habits, or morals, which are of critical importance in underwriting individual medical expense insurance, are not as important in underwriting the family unit.

Severe deformities that need surgical correction and the chronic diseases, along with accidents, produce the principal underwriting problems of the childhood period. In adults, the chronic wasting and degenerative diseases usually render the person uninsurable.

To make this insurance available to more people, policies now are being liberalized excluding certain conditions and the complications arising from them, and efforts are being made to handle certain impairments of applicants subject to extra premiums. In either case, the medical underwriting will require considerable attention.

In addition to these considerations, the claim costs of Major Medical Expense Insurance vary directly with the income status of the insured; increase markedly in later years of life; and are related to medical costs in various geographic areas of the country. In the family, the costs are frequently estimated on a 1-2-3 basis, where one unit represents the dependent children's cost; two units, the male employee; and three units, the employee's wife.

The *second* consideration—and the chief subject of this presentation—is cost control of Major Medical Expense Insurance, with its relationship to improper use by those insured and by the medical and allied professions.

The continued success of Major Medical Expense Insurance depends on cooperation from five distinct segments of the American public: (1) the physician, (2) the hospital, (3) the insured, (4) the insurance company, and (5) in the case of Group Major Medical Expense, the employer.

(1) *The physician.* Physicians have many reasons for being interested in the success of Voluntary Health Insurance.

According to The Health Insurance Council issue of August 1956, the 1955 benefits payable by type of benefit and by type of insuring organization were distributed according to the following table.

| Type of Benefit | Type of Insuring Organization | | | |
|---|---|---|---|---|
| | Insurance Companies | Blue Cross-Blue Shield | Indep. Plans | Total |
| Hospital expense | $ 745* | $ 870* | $ 75* | $1,690* |
| Surgical and medical expense | 445 | 340 | 55 | 840 |
| Loss-of-income | 595 | ... | ... | 595 |
| Total | $1,785 | $1,210 | $130 | $3,125 |

* Millions of dollars.

We all know the political as well as the sociological importance of the problems of financing the costs of medical care. Both of our major political parties recently have focused much attention on Major Medical Expense or catastrophic illness insurance. The Eisenhower administration has twice unsuccessfully introduced bills to provide a government-sponsored reinsurance plan to expand such coverage. In outlining his "New America" health program, Mr. Adlai Stevenson recently favored a program to make comprehensive private health insurance available on a voluntary basis to all Americans.

Dr. Norvin C. Kiefer, Chief Medical Director of the Equitable Life Assurance Society, recently told a "Symposium on Medical Education and Industry" sponsored by the National Fund for Medical Education, that the physician "must learn that industrial and other voluntary health programs, although they may force him into some alteration of the conduct of his practice, nevertheless are based on an ideology of private enterprise and therefore are fundamentally sympathetic to his own desire to protect the private practice of medicine."

He continued, "These programs need the physician's understanding, active participation and full cooperation. If he fails to give such support, the result will be a weakening of such programs to a point where they no longer can satisfy public demand. Can we assume other than that from the resultant prostrated private health system, will emerge a mighty governmental health program?"

"If our private system fails," he asked, "what other answer could there be from a maturing democracy?"

(2) *The hospital.* Today, modern hospital service is an important part of the nation's standard of living. The remarkable development of hospitals and other health facilities over the last 50 years has been an important factor in the nation's improved health.

Ray E. Brown, immediate past president of the American Hospital Association, recently discussed the problem of rising hospital costs and described how it is inevitably going to get worse. Writing in "Hospitals," the official publication of the AHA, he said: "Unless there is a very significant decrease in the general economic situation, we must expect hospital costs to continue to increase at about 5% annually for many years. Only by the best efforts of hospital boards, administrators, medical staffs, and all members of the hospital team can costs be held within that level of increase." He pointed out that for the nine-year period, 1946 through 1954, total costs of short term, general hospitals increased $12.37 per patient day. Of this increase $8.23 was in payroll alone. While the total costs per patient day were thus rising by a factor of 132%, the payroll costs per patient day were rising at the rate of 165%.

One area for future improvements in which hospitals are actively working is improved and more uniform accounting methods. Obviously, if hospitals, particularly small ones, are better able to control their costs, insurance companies will be better able to control premiums on hospital insurance.

(3) *The insured.* The insured's cooperation is needed to prevent abuses. When insurance benefits are paid for needless work absences, or when the insured demands insurance benefits for unnecessary or overlong hospital stays, unneeded medical service, or health luxuries generally, the effect is to increase the costs of the insurance without any corresponding increase in its true value to the individual. While the majority of the insured do not abuse health insurance, it is hoped that the minority inclined to do so can be made to realize that they—as part of the public at large—are paying the bill.

(4) *The insurance company.* Insurance companies which sell Major Medical Expense Insurance have a great responsibility to the public. Actuaries and underwriters planned this insurance on a sound basis for the public benefit.

Benefits that are promised regardless of any similar coverage by another company encourage abuse. Not only can such duplication of coverage and the consequent duplication of benefits become a temptation to certain policyholders, but it may lead to indignation on the part of the physician who has charged a regular and customary fee, and then discovers that, as he says, "The patient is profiting at my expense."

Insurance companies have been criticized for giving insufficient attention to overutilization of medical facilities. It has been stated by some critics that that we merely keep an eye on claims experience and adjust our premiums when necessary to guarantee that expenses, whether justifiable or not, remain adequately covered. Is such criticism deserved? Perhaps so.

When a claim which seems to be excessive is presented to us, do we pay it without a complete study of its merits? Would not diplomatic contact and negotiations with the medical profession and hospital administrators be more effective? And is not the leadership in such endeavors a responsibility of medical directors of insurance companies?

When luxury benefits are paid, premium charges necessarily are raised, without any increase in the true value of the benefits offered. An insurance company would be remiss in its duty toward its policyholders if it insisted on increased premiums every year or so in order that luxury benefits would go to a few less conscientious policyholders. It would also be contrary to sound insurance principles if the insurance company did not do everything possible to study and curb, if necessary, any questionable practices tied in with Major Medical Expense Insurance whether it be by an agent, a policyholder, hospital, or doctor.

(5) *The employer.* Industry in recent decades has contributed much to the development of health insurance and also has made great strides in company programs for improved health of employees.

Employers have adopted improved safety practices, have provided healthier working conditions, reduced occupational diseases, and in many instances have established well equipped and competently staffed medical departments which provide preemployment and preplacement examinations, periodic health examinations, and emergency treatment for employees.

Concerning the prevention of abuse of Group Major Medical Expense Insurance, employers occupy a particularly strategic position. Their medical directors, whether employed on a full-time or part-time basis, can often be helpful in distinguishing between the bona fide claim and the luxury, exaggerated or dishonest claim for benefits. It is decidedly to the employer's advantage to cooperate in preventing the payment of excessive and unjustifiable benefits. The net premiums on Group Health

Insurance policies paid to insurance companies are closely proportionate to the benefits paid. Thus, the employer in helping to prevent excessive benefit payments not only contributes to the success of his Major Medical Expense Insurance plan but also reduces its net premium cost.

Now let us return to the problem of excessive charges, the need for cooperation of the medical profession, and what we, as insurance company medical directors, can do to help solve it.

The insurance industry knows that medical costs must be kept within reasonable bounds. Organized medicine recognizes the danger of allowing these costs to get out of control. What is needed is a more effective method of channeling information from insurance companies to individual members of the medical profession. Here is a fertile field for medical directors. As medical directors we must take cognizance of anything that threatens the success of our Voluntary Health Insurance system. Medical directors in all companies engaged in the accident and health field should periodically visit medical societies to solicit and encourage support of the medical profession.

Many articles, pamphlets, and addresses on Voluntary Health Insurance have been prepared—chiefly by laymen. In the main, they have been good; some have been critical of insurance companies, some of practising physicians, and some of patients who demand services and benefits which are in the luxury class. But thus far we have failed to get across to enough American physicians the story of the existence and effects of unnecessary charges, even flagrant abuses, that have risen in the field of Voluntary Health Insurance.

Whatever criticism is implied here is offered constructively and for the future good of both Voluntary Health Insurance and the medical profession. Certainly it is not directed at the vast majority of physicians and surgeons who practice ethical medicine and render their usual and customary fees regardless of whether or not their patients have insurance. Rather, it is designed to solicit serious consideration by a minority of the medical profession who apparently do not understand the motives or problems of Voluntary Health Insurance and the crucial importance of their cooperation to the success of the voluntary health system.

The fact that the maximum benefit in a Major Medical Expense Insurance policy runs from $2,500 to $10,000 provides an unusual range of charges that the insured may be able to pay. The high ceiling on charges opens the door not only to overcharges by physicians, particularly surgeons, but also to overutilization of hospital and nursing facilities, unjustifiably expensive treatments, and unnecessary diagnostic procedures. In Major Medical Expense Insurance the deductible and coinsurance provisions alone cannot control such charges.

Some insurance companies, including the Equitable Life Assurance Society, are now issuing a comprehensive health care policy which combines the basic plan along with major medical features. This demands even more attention from medical directors of companies selling such a policy and greater understanding and cooperation on the part of practising physicians.

Abuse of any insurance plan occurs when there is excessive or injudicious use of the services of a physician, nurse, or hospital, unnecessary laboratory tests, x-rays, electrocardiograms, and expensive drugs, as well as continuation of disability sick benefits once the patient can return to work. There are certain factors, however, that have a legitimate effect on the amount of the medical or surgical fee. Among these are: (1) the claimant's financial or executive position, (2) the professional standing of the attending physician or surgeon, and (3) the extent of the surgical and medical service provided, including any unusual problems or serious complications that may have been encountered.

In Major Medical Expense Insurance, where these factors are involved separately or in combination so as to create unusual circumstances, special consideration should be given to a physician's or surgeon's charge. It cannot be overemphasized that careful attention must be given to each individual claim. Keeping in mind the provision that "charges shall in no event include any amount in excess of the regular and customary charges for the services, supplies and treatment furnished," unusual and extenuating circumstances also must be recorded and carefully evaluated.

There are two chief categories of high medical and related fees encountered in Major Medical Expense Insurance claims: (1) Those in which the fee is distinctly higher than expected. These are the most readily detected, easily investigated, and effectively contested. (2) Those in which the fee is only a little higher than expected. This category has been aptly called "creeping costs." Recognition of their existence is likely to be tardy, investigation is difficult, and effective countermeasures must be based on accumulation of a large number of cases and depend on long range educational efforts.

In the long run, the second category, if unchecked, probably will do more damage to Major Medical Expense Insurance. The first category, however, offers more immediate prospects for corrective measures.

A fee is considered to be excessive when it is unreasonable in relation to the factors previously mentioned. The following are a few illustrations of such actual cases that have been received and come to my personal attention during the past two years.

Case 1. The claimant's annual income was approximately $2,500; a lobectomy was performed; surgical fee was $2,500.

Case 2. Estimated monthly income of the claimant was approximately $250; a gastrectomy was done; the surgeon charged $1,500.

Case 3. Monthly income of the claimant was estimated at $500; dilatation, curettage, and cauterization of cervix was done; surgical fee was over $1,200.

Case 4. Annual salary of the patient was approximately $4,000; a semilunar cartilage of the knee was excised; physician's fee was over $1,000.

Case 5. Estimated monthly income was $1,000. The diagnosis was *questionable* angina pectoris, the patient being hospitalized three weeks. Two medical fees amounted to over $1,200, while total expenses were over $2,100.

Case 6. Occupation of claimant was that of common laborer. The operations consisted of amputation of one arm and setting a fracture of the other arm. The surgeon's charge was $2,500, and total expenses amounted to over $4,000.

The following are cases in which fees were unusual, but in view of the fact that the patients were either executives and/or in a high financial bracket, they were approved.

Case 1. A total hysterectomy was performed; surgical fee was $5,000, and total expenses were over $8,000.

Case 2. Suprapubic prostatectomy and bilateral vas ligation were done; surgical fee was $2,500, and total expenses were over $3,800.

Case 3. A diagnosis of cerebral thrombosis was made. The fees of three physicians totaled over $2,700, and all expenses amounted to over $4,700.

Case 4. A submucous resection was performed for which the surgeon charged over $1,800. Total expenses were over $2,800.

The medical department of an insurance company has a great responsibility in a field so intimately connected with medical care. A proper approach by a medical director promotes better understanding from members of the medical profession, and personal contact by either telephone or correspondence should be handled by a medical director if the company wishes to obtain full information from the attending physician or surgeon, substantiate its consequent medical action, and provide the clinician or surgeon with an explanation of the action.

The Equitable Life Assurance Society has been active since 1911 in the growth and development of Group Insurance. It was the first life insurance company to announce a Major Medical Expense policy for individuals and families in August 1951.

Almost three years ago a new activity was initiated by its medical department. This led to the establishment of the Industrial Health Service, the chief objectives of which are to establish good medical public relations with Equitable Group policyholders by assisting them professionally in matters relative to Claims Experience and Industrial Medicine, and to act as medical consultant for the Equitable in the field of Voluntary Health Insurance.

Efforts to combat abuses of basic coverages, as well as of Major Medical Expense Insurance, are among the functions of this new service. It is located in the medical department under direct supervision of the chief medical director in order to preserve its medical identity and to assure full use of all medical department facilities and skills. It is closely related to the work of many other departments but especially of the group, claims, underwriting, and legal departments.

When requested by the Claims Analysis Service of the group department, visits are made to group policyholders in cases of unsatisfactory claims experience with their Group Hospital, Accident and Health, and Major Medical Expense Insurance plans. These trips are designed to help solve the problems and to create a more favorable relationship among the group policyholder, local physicians, and the insurance company, on a high medical executive level.

Talks on health insurance are given at medical societies and hospital staff meetings. Doctors are interviewed personally on questionable claim matters. They are contacted in person, by telephone, or by letter on matters pertaining to health insurance, including, of course, unusual fees. It has been found that a tactful approach by an insurance company medical director, talking as physician to fellow physician, is more likely to enlist cooperation from the attending physician than is an approach, no matter how careful, by a nonmedical representative of the company.

The results of addressing medical societies are impressive. Confidence is enlisted by pointing out that competence in clinical medicine is essential to competence in insurance medicine, and that many of us have had considerable experience in both fields. Recognition that the speaker is truly a fellow physician who is first of all interested in preservation of our system of private practice of medicine, results in a friendly and cooperative attitude on the part of the physician audience.

Some basic insurance facts and the meaning of health insurance are described. Specific examples of where the insurance industry and the doctors can and should cooperate are pointed out. Major Medical Expense Insurance with its distinct features and potential abuses are reviewed. The question and answer period following the talk has always proved to be stimulating and interesting. The atmosphere of these meetings is anything but hostile; an exchange of views occurs in a setting of dignity, respect and courtesy.

From personal experience over the past three years there is reason to believe that the physician in practice is interested in insurance, particularly that part involved in medical care. He soon realizes that insurance payments form a substantial part of his income and he is quite willing to give it the thought and attention it rightfully deserves.

Attendance at these meetings usually is the result of an invitation from either the president or secretary of the county medical society. Meetings are scheduled months in advance and are properly advertised to the membership.

In presenting my talk to physicians, it is stressed that all forms of voluntary insurance, including Blue Cross and Blue Shield, are being considered. At first, some physicians may show an unsympathetic attitude toward insurance in general and express their belief that the insurance industry is trying to regiment medicine. They are assured that the insurance industry is in no way interfering with the private practice of medicine. They are told that, by providing various forms of Voluntary Health Insurance, insurance company interests are indeed in sympathy with those of the medical profession, and that Voluntary Health Insurance plans are perhaps the last bulwark against a national medical and health care program.

I believe that these talks to local medical groups are of great value, but, unless many other insurance companies join in these efforts, the number of such medical groups that can be reached is severely limited.

Some possible recourses should be mentioned for use when an understanding with the physician cannot be reached concerning individual excessive charges. We know, of course, that the American Medical Association has encouraged use of the County Medical Society Grievance Committee. In my opinion, a direct approach to the doctor always should be made first by a medical director of the insurance company.

Before presenting a claim to a County Society Grievance Committee, we must have the cooperation of the County Medical Society. Although these committees are sympathetic to a grievance from an individual, physicians frequently are less sympathetic toward insurance companies with their great assets appearing before a grievance committee as a third party. Furthermore, sympathy for the company may be discouraged by the attitude of the insured who has paid an insurance premium for his coverage and mistakenly feels that he is recouping money that is rightfully his regardless of the merits of his claim. Such cases are likely to result in bad publicity for the insurance company. In a group policy the employer has a financial interest and public position to be protected.

It is hoped that in the near future a more satisfactory mechanism can be developed between medical societies and insurance companies in order to evaluate cases in which fees seem unreasonable.

## Summary

The medical director has an important role in the successful operation of Major Medical Expense Insurance. It is his responsibility to see that the claims department has available at all times professional advice in order to avoid abuse and overutilization of any health plans. If he approves any unreasonable claim without thorough study of its individual merit, he is simply inviting more abuse.

The directive to the medical director therefore is quite clear. He has a useful function to perform from which he should not and cannot shirk. His cooperation is necessary to the underwriters, claim representatives, and agents for the insurance plan; to the physician in order that he may solicit his cooperation necessary to make voluntary health plans successful; to the employer to see that costs are kept within bounds; and to the insured to see that equity is provided.

Major Medical Expense Insurance is no longer in its infancy but is now experiencing growing pains. In spite of those pains, its growth has been phenomenal. What is needed most at this time is intelligent understanding of and sympathetic consideration for the problems of both insurance companies and medicine. An intensive educational and public relations program directed toward better public understanding and full cooperation by physicians is necessary for Major Medical Expense Insurance to complete its objective.

### Bibliography

1. Brown, Ray E.: Nature of hospital costs. Hospitals. **30**:7:36-41 (April 1) 1956.

2. Chamber of Commerce of the United States: Major Medical Expense Insurance. Washington, D. C., Chamber of Commerce of the United States, 1956, 33 p.

3. Health Insurance Council: The Extent of Voluntary Health Insurance Coverage in the United States as of December 31, 1955, New York, The Health Insurance Council, 1956, p. 12.

4. Health Insurance Council: The Health Insurance Story, New York, The Health Insurance Council, 1954, 63 p.

5. Kiefer, Norvin C.: Responsibilities of Society for Health in Our Industrial World. Journal of Medical Education. **31**:3, Part 2:8-14 (March) 1956.

DR. FILSON—Our next and final speaker is a veteran, having had an active part in his company in the building and the administration of an ever-changing and broadening picture of accident and health insurance growth. This experience has now extended over some three and a half decades. Dr. Horan has contributed much in the affairs of this association. I am sure that to all of us, and especially to those who are comparatively new as medical advisors, there will be much to gain in the way of practical guidance through hearing the paper by Dr. Joseph C. Horan, Associate Medical Director of the Metropolitan Life Insurance Company. Dr. Horan will speak to us on the subject of "Noncancellable and Guaranteed Renewable Insurance — Underwriting Considerations." It is my pleasure to introduce Dr. Horan.

# NONCANCELLABLE AND GUARANTEED RENEWABLE INSURANCE—UNDERWRITING CONSIDERATIONS

Joseph C. Horan, M.D., New York

The previous speakers have given an integrated picture of health, accident and major medical insurance. Mr. P. C. Irwin stated that there is much yet to be done in expanding coverages and increasing benefits. He pointed out that all these efforts are being made to give the American people the best health care possible on a voluntary basis, thus avoiding the dangers of socialized medicine. This point needs no further emphasis. Mr. Joseph Follmann's excellent paper on major medical insurance analyzes this approach to broader coverage for the more expensive types of medical care. Dr. William McNamara's contribution concerning the role of the medical director in major medical insurance supplements and complements the paper of Mr. Follmann.

The remaining time will be given to discussion of another approach to meet the needs of the insuring public and this lies in the rather recent venture into the field of noncancellable and guaranteed renewable accident and sickness insurance. Contracts containing this very valuable concession can and are being written in both the individual and family hospitalization and surgical operation insurance, including the older age groups up to age 75 and, more importantly, to cover loss of income due to disability.

At the 62nd Annual Meeting of the Association of Life Insurance Medical Directors of America in 1953, a part of the *Transactions* was devoted to the subject of personal accident and health insurance. At that time the statement was made that in the previous sixty-one meetings of this group, accident and health insurance did not concern us enough to ever before devote a part of the annual meeting to that type of coverage. Because of the very rapid growth of this business and because of the large number of our member companies having entered the field within the previous five years, discussions pertaining to this subject were made a part of that program. The prediction was made then that 50% of the companies in the Association would be in the accident and health business by the end of 1954. This prediction was wrong on two counts. It missed by one year and by one company the exact year and the exact total. It was not until the end of 1955 that of the 214 life insurance member companies, 106, and not 107, were writing some type of accident and health coverage on individuals, families and employee groups.

Associate Medical Director, Metropolitan Life Insurance Company.

For many, if not for most of our companies, accident and health insurance was a new horizon. During the last half of the nineteenth century and the first half of the twentieth, most of our member companies were devoting themselves exclusively to the insuring of life. With a few exceptions, the entry into the accident and health business did not rapidly accelerate until about 1948. But the comparatively recent years have witnessed what might almost be described as a headlong scamper on the part of life insurance companies to enter this business. Therefore, most companies were without any experience whatsoever in a field that had been almost exclusively occupied before that time by accident and health and casualty companies.

Many people may tend to think of health insurance as being mainly insurance against hospital, surgical, and other bills for the treatment of ill health. But protection for the family breadwinner against loss of earning capacity can often be of greater importance. In cases where sickness or accident causes loss of income, the amounts involved are frequently much more than the hospital and doctor bills alone.

At the end of 1955, an unduplicated total of 39,444,000 workers had loss of income protection. This does not include, however, the millions of employees who have some measure of loss of income protection through informal wage continuation practices of their employers. Insurance companies are active in providing loss of income protection on both a group and an individual policy basis, covering 30,344,000 of the above total. Blue Cross–Blue Shield, however, do not offer loss of income protection.

In the face of figures given us by Mr. Irwin and the fact that more than 30,000,000 people are covered for income replacement, it would be trite to discuss whether or not the insurance industry is attempting to fill the public need for prepayment medical care and disability. The insuring public feels, obviously, that it requires and can afford to pay for such protection under our American system of individual private enterprise. We in the life insurance business are now providing ample opportunity for our policyholders to add this necessary supplementary insurance to round out their ring of protection against the financial losses due to accident and sickness and the high costs of medical care.

By tradition and training and our upbringing in the insurance discipline, we would have preferred to see this new type of business—hospital, surgical and medical as well as income replacement—in which most of the life insurance companies were novices, become seasoned and grow to orderly maturity in the same manner as did our life business. With methodical sales eventually giving us a wide spread of risk and the acquiring of a statistically matured experience, the company actuaries could then have recommended liberalizations and removals of restrictions and exclusions as they became warranted. We were, however, denied this opportunity by the very rapid growth of the accident and health business within the last decade. During this swift growth public and governmental agencies began to interest themselves in the problems which are inherent in this highly specialized business. Syndicated newspaper articles and monthly periodicals, as well as state legislatures and various agencies of the federal government, became very vocal in their criticisms of the sins of omission and commission which a few of the accident and health, casualty, and some life companies had allowed to creep into their operations. It is hardly explanation enough to point out that this young giant has achieved its gargantuan dimensions so recently that it is still subject to the adolescent growing pains attributable to its being still in the sometimes frustrating throes of puberty. These criticisms are not completely minimized by our pointing out that the offending companies were few in number and constitute a very small percentage of the total. This is particularly true in the face of the emphasis that the public agencies and lay press have placed on the refusal of companies to renew contracts principally because of deterioration in physical condition. You are all familiar with these criticisms and the National Association of Insurance Commissioners are particularly conscious of them. At their meeting in June 1955 at Los Angeles, they formed a subcommittee to study the problems incident to cancellation and to clearly define issues and ramifications to the end that any existing inequities might be alleviated to the mutual benefit of the insuring public, the industry and the regulatory agencies concerned. An interval report was issued in April, 1956, that dealt principally with the generic term "cancellable" as it had come into common usage. This was defined as the reservation of the right by the insurance companies in the policy contract not only to cancel a policy at any time upon at least five days notice and return of the unearned portion of the premium, but also to refuse to renew the policy on a premium date. The subcommittee's study indicated that 90.6% of all accident and health insurance purchased by individuals was on a cancellable basis. Despite the fact that the right of the company to discontinue any policy of insurance is not unfamiliar to the public, this subcommittee raised the question as to whether or not all individual accident and health insurance coverage should guarantee to the insured that his protection would be continued at his own option for as long as he desired it, or at least up to some stated ultimate age.

This study on cancellable accident and health insurance was very complete and exhaustive. In their early deliberations the subcommittee recognized that the historical dominance of terminable forms of this type of insurance, because of its very nature, reveals that the acceptance of such forms by both carrier and insured has been a reasonable development. They point out that, as medical men know, human health is a very complicated matter. There are people who are fairly well and those who are unquestionably sick, but there remain many who are not definitely either one or the other. Even diagnosis is not always crystal clear and among several persons in this gray area, the subjective attitude toward symptoms is variable. One shrugs off the symptoms and goes to work as usual. Another takes to his bed. A third may make an emergency call to his doctor, while a fourth demands immediate hospitalization. At the time the underwriter is dealing with an applicant, he may have reasonable assurance as to the moral character and reputation and presume that his future claims will be reasonable and just. However, this initial evaluation does not suffice because when that applicant gets sick, what he may do about working or not working becomes unpredictable. From a claim viewpoint, many other unknowns then enter the picture. In general, for those who are insured, the trend is toward higher frequency and severity of disability. Some such insured policyholders have acquired a financial ability to stop work which they did not have before they insured against these losses. The progress in the science of therapy enters into the picture also. Durations of many disabilities may be shortened by improved medical technics, but on the other hand the great improvements in mortality have permitted more people to survive to ages when disability becomes more frequent and more prolonged. The sad experience of the 1930's shows that morbidity rates were more than twice as high when the depressed economy provided little inducement to terminate disability and to return to work or to resist borderline disability. For all these reasons the cancellable contract was one solution to the problem and the company's right to decline renewal to any individual permitted it to retain those risks who continued to meet the underwriting standards, and by eliminating those risks who produced a disproportionate amount of claims, the company could continue to renew the coverage for most of its policyholders at the same low premium rate for as long as their aggregate experience warranted.

The subcommittee studied the reasons for cancellation. The principal ones included discovery of misrepresentation or fraud, false, exaggerated or excessive claims, moral hazard subsequently developed or undetected at the initial underwriting or evident in the claim experience, overinsurance, and discovery of undisclosed preexisting medical history. Other causes were deterioration of health below the underwriting standards of the company, changes in occupation where the occupational hazard is materially affected, attainment of the age limits for which the policy is rated, and full payment of benefits promised, leaving the insured ineligible for further benefits.

After an industry committee had been invited as advisors to the Commissioners' Subcommittee, they recommended continuing augmented voluntary efforts to meet the problems within the industry itself without additional statutory or administrative enactments. The Commissioners' Subcommittee, however, felt that there was need for more immediate and decisive action to satisfy the principal cause of policyholders complaints and the reasons least understood by the insuring public which had to do with cancellation because of deterioration of health. Their final report, which was adopted by the parent committee and the National Association itself, last summer, recommended: (1) that in all cases the period of notice prior to cancellation be increased from 5 to 30 days, (2) that the guaranteed term of all accident and health policies be made not less than one year regardless of the frequency of premium payment, and (3) that the cancellation provision (as distinguished from the right to refuse renewal) be eliminated entirely. This would prohibit cancellation of the policy during the period for which premiums are paid. In general, few companies, and probably no life companies, are currently using the cancellation provision, relying entirely on the right to refuse renewal.

Other recommendations concerned themselves with the admonition that companies voluntarily make a sincere effort to refrain from refusal to renew solely because of deterioration of health.

An attempt has been made in what has just been said to give you a complete and at the same time a succinct evaluation of the recommendations of the National Association of Insurance Commissioners, realizing that it has used up a part of the time assigned to the subject of this paper. The reason for this is that your own executives are aware of this report and they may ask for your views concerning what your own company should do in their approach to the noncancellable and guaranteed renewable questions.

One rather persuasive argument in favor of a noncancellable type of coverage runs somewhat as follows: "When I apply for life insurance it is because the loss to be insured against—my death—is a loss I can anticipate will surely happen and I want to pay premiums to meet that eventuality. When I apply for health insurance, the loss to be insured against is sickness, i. e., deterioration of my physical condition. When that eventuality does happen, I do not want the coverage to be in jeopardy of cancellation by the insurer, else where is my insurable interest and why should I be paying premiums only during the time I am not incurring any loss. Or, put another way, why, after the reason inducing me to buy protection—the hazard of a deterioration of my physical condition—has become an established eventuality, should the insurer have the right to cancel any further promise of protection when I need it most and have no chance to replace the coverage elsewhere?"

However specious the argument may be, it is indicative of a public need for coverage which cannot be cancelled by the insurer. Many of our companies have, therefore, entered into, or reentered, the noncancellable field. Some have gone into it exclusively and others have introduced it as an additional line. Some few accident and health companies have never stopped writing it at all.

The noncancellable type of insurance was first introduced in this country as long ago as 1907. That pioneering experiment was underwritten by the National Masonic Protective Association of Mansfield, Ohio. The first corporate carrier was the Massachusetts Accident Insurance Company which began writing guaranteed renewable contracts in 1915. With the huge losses which occurred during the depression, nearly all of the companies in that field were forced to stop the issuance of this type of coverage because the old policies paid lifetime sickness benefits.

The new noncancellable and guaranteed renewable policies now being written for loss of income protection limit the losses by restricting sickness benefits to a specified number of years instead of the old lifetime sickness benefits which proved catastrophic during the depression. The premiums charged are higher and the hope is they will prove to be adequate. These guaranteed renewable disability income policies carry with them a guarantee that they will be renewable at the same premium rate. In other words, the premium itself is guaranteed for the duration of the policy. This is not necessarily true of the noncancellable and guaranteed renewable hospital and surgical policies. The premium at the same rate is specified there with a proviso that if the experience in the entire class indicates the need for it, the premium rates at some future date be increased on all policyholders falling within that classification.

When we come to the underwriting considerations for long term noncancellable and guaranteed renewable disability, we all agree that the requirements must be more rigid than those used for underwriting

of cancellable forms. The medical underwriter must try to forecast what type of impairments or adverse past medical histories carry with them an implication of future deterioration of physical condition. In these newer so-called noncancellable and guaranteed renewable forms of coverage, wherein the right of periodic reselection is forfeited, the initial classification of the risk is the only one which will be afforded to the company. The old accusation that a company may be doing its underwriting in its claim division is a criticism which none of us ever liked and a technic against which any company entering this new business will be hereafter automatically foreclosed.

The causes of long disabilities are fairly well known to us from our experience and, of course, we do not want to grant this type of coverage to applicants with serious organic disease of the cardiovascular or renal systems. We can declare as uninsurable at the time of underwriting, diseases of the brain and spinal cord, the chronic arthritides, cases with histories of malignancy, chronic tuberculosis, bronchiectasis, emphysema, and severe asthma. These, and many other similar impairments, cannot be given favorable consideration for this type of insurance. The difficulty at the time of underwriting for the medical underwriter will come from those impairments and adverse medical histories which are much more borderline. In an attempt to be practical, we have reviewed our actual underwriting of applications for noncancellable and guaranteed renewable in accident and health insurance and find that the principal medical reasons for not issuing were in a descending order of frequency about as follows: the serious organic diseases cited above, plus peptic ulcer, hypertension, visual impairments, mild psychoses, low back impairments (principally disks), overweight, leg or foot impairments, histories of kidney disease or stones, and arthritis.

To get a sharply focused accurate photograph of an applicant for long-term guaranteed renewable accident and health insurance, we cannot depend on the somewhat indistinct snapshots such as have served in the past for policies which had limited liabilities by reason of the fact that they were nonrenewable and even cancellable. To obtain this sharply focused portrait of the applicant, it will now be necessary to use a tripod. The underwriting tripod has its first and very important leg in its field underwriter. A proper field training program to teach him the essential elements of selection for this type of risk is essential. He should learn the importance of correct, complete, and comprehensive answers to the question in the application. The applicant himself cannot be expected to know the underwriting significance of his own past medical history, nor can he give a proper valuation to impairments previously disclosed to him by his physician. The well-trained agent can bring out the facts when he is completing the application. One of the most important criteria in the acceptance of an applicant for this more generous coverage depends on the applicant's character and reputation. Only the well-trained local agent can do this part of the underwriting adequately. He must be taught how to appraise this fairly intangible characteristic of moral hazard and such underwriting ability should supersede his eagerness to demonstrate to his company his expertness in salesmanship. Satisfactory results and the success of the insurer are closely related to the quality of the company's agency operations and the adequacy of its field underwriters.

The second leg of the tripod is the lay underwriting as practiced in the home office. Teams of junior lay underwriters can handle all the simple cases referring only those beyond their ability and authority to the senior lay underwriter, who supervises their work, for his final decision.

The underwriting division has, in addition to the application and agent's report, other tools to aid in its decision. Inspection reports will provide information about the exact duties of the occupation, the amount of the earnings, the personal habits and reputation. Statements from attending physicians are valuable aids on the past health history. Whenever indicated requests for reports from company examiners should be initiated and in some cases, especially in older applicants seeking this very generous coverage, these are absolutely essential.

Where the underwriting rules require reference to the medical underwriter, and very many of these applications should require the use of this third leg of the tripod, all of the specialized knowledge and experience of the medical director doing this work must enter into the final decision. As the medical underwriter, he then has several courses of action. He may recommend acceptance, taking a calculated risk that this applicant and the others in the group into which the given applicant falls because of past medical history and physical impairments will show in the aggregate about the same disability probability as the normal group upon which the premium rates were predicated. If the evaluation of the risk places the applicant so far outside any such favorable prognosis, one may recommend declination altogether. In between these two extremes there remains considerable latitude. For acute impairments from which full recovery may be expected appropriate action would be to postpone acceptance. Other factors of adverse past medical history or physical findings can in many instances be insured with a properly worded exclusion endorsement, with or without a time factor, for future review. Other underwriting considerations related to limitations of over-all dollar amounts or prolongation of the waiting periods may be utilized.

In making the transition from the underwriting of standard to noncancellable and guaranteed renewable the medical underwriter is of necessity the

one who controls this experimental enterprise. Thus it is that the medical director doing this work must learn to make wise and equitable decisions. If he is overconservative in his prognoses and thereby runs up a very high rejection rate he may derive comfort in having done a fine job of medical underwriting, but eventually there will not be enough premium income with which to pay his salary. Furthermore, his company will not accomplish the purpose for which they embarked on the new business because of his ultraconservatism. His company will be placed in the position of having offered very attractive policies which, as a practical measure, will be very hard or impossible for the public to obtain because of excessively high medical hurdles. One of the deterrents to the generous use of fairly comprehensive exclusion endorsements under the standard forms was the philosophy that too many rider restrictions on these limited policies result in issuing too restrictive a coverage and accepting too much unearned premium. These new forms of contracts are so much more valuable because of their long term coverage which cannot be cancelled and which must be renewed that the more ample use of exclusion endorsements can be justified because of this very fact alone. Utilization of exclusion endorsements for the more serious impairments and fewer of them under the limited standard forms will give the medical underwriter more latitude in his underwriting.

If this philosophy can be accepted, underwriters may want to give consideration in setting up their underwriting rules for use of exclusion endorsements in the borderline group for impairments which have produced symptoms resulting in a diagnosis of arthritis, asthma, cataracts, detached retina, diverticulosis, emphysema, gastric and duodenal ulcers, ileitis, kidney stones, osteomyelitis, pyelitis, thyroid disease, and many other conditions in which there has been a reasonable interval of time since cessation of symptoms—the risk being otherwise first class.

In formulating medical underwriting rules, advantage should be taken of any technic which will avoid a high rejection rate and at the same time include with proper exclusion endorsements as many applicants as can safely be underwritten.

To be a really practical contribution this portion of the program should be concluded with the distribution of a "guide" for the investigation and rating of medical impairments pertaining to the underwriting of noncancellable and guaranteed renewable accident and health insurance. We are sorry no "guide" exists and if there were one it would be a sham without authenticity. This is for the obvious reason that any such "guide" should be premised on claim experience and this field is so new that no representative or dependable experience has yet been accumulated.

The theme for this symposium was set by the first speaker who stressed the public need for expanding coverages. Major medical insurance is one way of meeting the needs of the public. Noncancellable and guaranteed renewable disability as well as hospital and surgical will satisfy another demand. Some accident and health and life companies have entered the truly substandard accident and health field and through the mechanism of a rated-up premium they try to anticipate and cover losses due to the very impairment which makes the applicant substandard. We will watch with interest the experience which develops in those companies because they are undertaking a further effort to fill a public demand and need.

Two other approaches need only to be mentioned. My company is attempting to cover the older age groups up to age 75 with a noncancellable and guaranteed renewable hospitalization and surgical operation benefit policy. This is being offered to counter the criticism that when the need for hospitalization and surgical operation insurance becomes greater because of advancing years and when the individual's group coverages cease by reason of semiactivity or actual retirement, there has not been any way to replace this needed coverage. These policies may include the spouse and dependent children. An alternate method of expanding coverage is being tried by some companies writing group insurance. A contractual privilege of converting the hospital and surgical coverage to an individual or family hospital and surgical policy on a nonmedical basis, with the payment of appropriate premiums, is being offered in some group plans. This conversion privilege may be utilized on the retirement of the insured employee or for the continuation of coverage at his death on his widow and dependent children. Some personal family hospital and surgical plans also now contain a similar conversion privilege. There has been a demand also for an opportunity to obtain hospital and surgical coverage which would provide a lifetime benefit for an individual or eligible dependents which would be marked "Paid-Up" when both the husband and wife have reached age 65. By contribution of some additional premium during the productive years, we are issuing this type of hospital and surgical operation insurance which continues in force after the termination of the premium paying period.

To conclude the underwriting considerations as applicable to noncancellable and guaranteed renewable accident and sickness insurance, we have premised our remarks on the use of exclusion endorsements as this is the accepted underwriting technic presently being employed by most companies engaged in this business. A good case can be made for the use of exclusion riders because the applicant is better off to be insured against all causes of disability other than the excluded one, than to have to fore-

go insurance altogether. The use of this technic represents the only practical way available presently for handling certain conditions which might be correctable or disabling for a short time or subject to recurrences. As experience accumulates in those companies using exclusion endorsements, perhaps underwriting rules can be modified because no one likes to issue policies with limitations. It can be presumed that the few companies that have entered the substandard field were motivated by their dislike for exclusion endorsements and the hope that a practical numerical rating table calling for extra premiums to cover the additional hazard will prove to be a sound underwriting device.

DR. SIMMONS—Thank you, Dr. Horan. This concludes the formal papers and they are now open for discussion. The essayists will withhold discussion or answers to questions until all questions have been presented.

I am aware of the fact that there are guests in our meeting room this morning, some of them not physicians, and I wish to invite them to join in the discussion of these very important papers.

DR. DONALD G. KILGORE—I want to express my appreciation first for the comprehensive coverage we have had of this subject. I would like to endorse Dr. McNamara's remarks about the medical profession. My experience has been that they are eager to hear about insurance medicine and when properly presented I can assure you of their sympathetic attention.

I have been asked to speak briefly about the committee we have in Texas, a joint accident committee, composed of representatives from hospitals, the insurance industry, and physicians. When a member of one of these groups feels that he has a just complaint and has not been able to satisfy himself otherwise, he first gives this complaint to the appropriate screening committee. If he is a doctor it goes to the medical society; if he is a member of the hospital group, the hospitals have their associations; if he is in the insurance group, the insurance industry has the claims association. These committees are composed of people who have had vast experience in settling disputes. They may dispose of this complaint by a simple suggestion to the man bringing the complaint. If they think it has merit, it is passed on up to the higher committee. This "Hip-Jack" committee has no particular power except that of moral force but when these groups get together and lay all of the facts on the table, ordinarily most complaints are disposed of quickly and satisfactorily to everybody concerned.

DR. SIMMONS—Thank you, Dr. Kilgore.

DR. UNGERLEIDER—Dr. Simmons, I have been impressed, as most of you have been, by the quality of these papers. They have pointed out some of the ways in which the medical directors can and should participate in these programs. Now all of you are busy, and in making these contracts with the medical profession, a certain amount of research is necessary. This includes some amount of inquiry into what is being done in other companies, research of other publications, which may be difficult to procure. I want to call your attention to the publications of the Health Insurance Council. During the last years there have been five such publications and each of you should have received them. If not you may get them by writing to the Health Insurance Council. But the best thing the Health Insurance Council has done, in my opinion, during this year is the provision of a rather comprehensive speaker's kit. It consists of something like seventy or eighty pages. All the research has been done on the important points necessary to make a talk before any kind of medical society, and I would suggest that each of you write to the Health Insurance Council for a speaker's kit. By so doing, you will be able to address the county medical societies, as both Dr. McNamara and Mr. Follmann suggested. I believe that contact with the Medical Directors Association is desirable not only in the health insurance field but in all phases of our business.

DR. SIMMONS—Who else would like to speak on this important phase of our program?

DR. JOHN MCC. PECK—I just have a question. I would like to ask Dr. Horan if the lay underwriters have a manual available to them for their routine handling of applications.

DR. BERTHOLD T. D. SCHWARZ—It has been a very great pleasure to hear all of the fine papers throughout the meeting. I would like very much, however, to direct my two questions to the two medical speakers who participated in this symposium.

Dr. McNamara referred to the case of exorbitant medical costs of doctors' fees. Sometimes that is a very difficult proposition to determine what is unreasonable. For example, we have different social and economic strata in our population. Therefore, their requirements—the subjective requirements of the patients—vary. One might be satisfied with minimal medical attention and tests and perhaps his service bill might amount to $250. Another patient in another economic class might require all the tests he can get and his bill might come out tenfold greater. How are you going to evaluate what is reasonable and fair? Is it going to be a rule of thumb? Maybe Dr. McNamara would be able to help us.

Then, a question to Dr. Horan, I wonder how we might approach the exclusion rider proposition. That is a very fine thing, too, but take the example of arthritis—he mentioned that. Suppose a claim is submitted and the patient has an arthritis exclusion, but his diagnosis comes up from his doctor that he has sciatica, neuritis or recurrent lumbago.

DR. HALL SHANNON—I would like to ask Dr. Horan if they pay for services rendered to their policyholders by chiropractors and osteopaths. I do

not know what the rest of your experience has been, but we have recently had several claims by chiropractors. Unfortunately, the law has been passed in Texas that their testimony in court has to be accepted.

DR. F. HARTLEY SMITH—It might be interesting at some stage in this to ask those who occupy some sort of official position with state or county medical associations to hold up their hands. I think a fair number of our doctors here already have some such association. I think it would be interesting to find out.

DR. SIMMONS—Suppose we have such a show of hands of those who have or have had positions in county or state medical societies. (There was a show of hands.) That is a wonderful showing.

DR. RICHARD B. SINGER—I have just one question to ask Mr. Follmann or anybody who can supply an answer. Do any of these major medical expense plans provide for psychiatric care?

DR. JOHN G. ROSS—It seems to me the fundamental thing in coverage for accidents, health and hospitalization is the desire of the public to have security against these hazards, which is creating the problem for us as insurers and ourselves as physicians as well. While the major medical expense coverage seems to be the best answer there is still a large segment of the population that is not covered, principally by reason of cost. I wondered whether the gentlemen who have spoken this morning might have some comments on that particular phase of it. How can we reach these people? I think in that way we can prevent the government stepping in and taking over if there is some answer to that problem.

DR. SIMMONS—Good question. Who else would like the floor?

DR. JOSEPH E. O'DONNELL—I have an opinion rather than a question. I think that a great deal of our expense on Health and Accident insurance comes from the patient who is seeking—and the doctor as well—a clinical work-up. The insured comes into the office with a pain and the doctor has to find out, and certainly the patient wants to find out. He takes recourse through his hospitalization to do that when the same procedure can be much more economically done as an outpatient. We are forcing a lot of people to go to the hospital for x-rays and simple procedures which normally could be done either in clinics or in offices or as outpatients. I come from a community of 35,000, and this is a very customary procedure there and it adds tremendously to the cost of hospitalization.

Now while I have the time to express an opinion, it seems to me that we ought to pay some attention to the federal method of handling equal complaints. If a client has stomach ache and goes to a Veterans Hospital and has a duodenal ulcer, he may lie in that hospital six or seven weeks. If he goes to Mayo Clinic he will be through and back home in four or five days—a matter of considerable economic difference.

And I have one further opinion to express: since I have been a medical director, I have been very much aware of the 10 and 15% disabilities on people with normal physical examinations. I think that if our group could make themselves heard at the federal level it would do the taxpayers, themselves, and the profession a great deal of good.

DR. SIMMONS—Thank you for those comments. Does anyone else want the floor?

DR. MCSHANE—I would like to ask Mr. Follmann if it is within the realm of possibility that possibly catastrophic hospitalization insurance could be added to the hospitalization cost. In other words, if a per diem charge of 10 or 15 cents a day were added to the patient's hospitalization cost, could insurance companies then guarantee to pay over a certain amount—when the bill became a certain amount, to pay the balance beyond that?

MR. FOLLMANN—Dr. McNamara is going to answer the last one, even though it was directed to me.

There was a question raised as to whether major medical covers psychiatric care, and I think that might include such things as alcoholism. The answer is that the company practices differ. Some companies do not at the moment, some do wholly and some do in part. Obviously there is great temerity in approaching this coverage, but Mr. Donald Cody of the New York Life Insurance Company was recently quite emphatic in calling to the attention of the insurance industry that it was nonrealistic in the last analysis to attempt to leave mental care out of the equation of medical care.

The question was raised about the indigent and the low income group, and that might also include the temporarily unemployed. This is a problem with which we are greatly concerned. We at the moment within the industry are giving some consideration to a rather comprehensive research and educational program aimed at all of what might be considered the problem areas. The indigent, the low income group and the temporarily unemployed are three of the problem groups with which we are very much concerned.

One problem, of course, which faces us is the suggestion that government pay the proportion of the premium which the policyholder or prospective policyholder cannot afford to pay. That—and here I am expressing purely a personal opinion—is perhaps much oversimplified. I think when this subject is given some thought, it will be found that among other things the parties might be forced into a means test, which I think everyone, including those in government, finds unsavory. This is a problem which we are studying. It is not an easy problem to talk about insuring people who do not have money to pay the premiums. On the other hand, they do

have a problem of financing medical care, just as much as anyone else, and I think we have to recognize the fluidity of these various groups. We have to keep very much in mind, I believe, the low income person—and this is without definition—they can be made indigent by the fact of serious illness. Either the low income group or the indigent may be the older aged people, another group of the population with which we are concerned. The older age group may in turn be the chronically ill, and the chronic illness may produce the indigency, so while these population groups are often segmentized by those in government and out of government, they have a way of flowing into one another, making it a rather difficult problem to cope with.

A question was raised with respect to diagnosis and outpatient care and how we might encourage this rather than handling it through hospitalization, or the use of hospital care itself. I tried to point out in my paper that this is one of the hopes underlying major medical expense insurance. As we have written the segmented coverages in the past, there is no question that we have forced the use of expensive hospital care where it was not necessary. We are very conscious of this. We recognize fully that the medical profession is very critical of us because of this and this is what we are trying to overcome through major medical. Here we need the cooperation of the medical profession and again this is where you medical directors can play such a very important and valuable role.

The matter of Veterans Administration hospitals was referred to; and, of course, this is a subject with which we have been concerned, particularly when the insurance business is criticized for not paying claims because many policies exclude coverage in government hospitals.

In my paper I referred to the amount of government hospital care, and the fact that this care only covers some 25% of the admissions to hospitals—the difference is in the length of stay—and that is why we cannot cope with it, as an insurance industry.

DR. HORAN—The question of Dr. Schwarz about the liberal use of exclusion riders. What do you do with them after you get them? I wish I knew. What we try to do is get an exclusion rider wording that says what we mean. We have a very forthright chairman of the board, who is a trained lawyer, and we have had it instilled in our indoctrination from the early days that if you are going to do something, say you are and put it in the contract; if you are not going to do it, take it out of the contract.

Well, I know, of course that when advising the claim division, these questions of the scrambled eggs are awfully hard to unscramble. Did the exclusion rider exclude that, and, if it did, will the law division defend you if we get into litigation? It is a very difficult problem. We do the best we can with it and try to be as liberal as we can in the interpretation of just what was excluded two, three or four years ago when we put the rider on, and see whether or not this current claim can be paid, if possible. Our slogan in the claims division is to pay every proper claim that we possibly can, and pay it promptly. That is not a very good answer, but it is the only one I have.

DR. SIMMONS—Dr. McNamara, I believe it is up to you now.

DR. MCNAMARA—I realize that the hour is late and I would just like to mention briefly a question or a statement by Dr. Schwarz on exorbitant fees. I do not like to use that term. It was expressed to me one day when I called a doctor on Park Avenue. He said, "Are you telling me my fee is exorbitant, Doctor?"

I said, "I have not used that word. I am sorry you got the wrong impression. But, your fee was $1500 and what we have in our surgical schedule is $150, so you have to admit it is a bit unusual." We do not have to use the word *exorbitant*, but it does require careful attention on the part of the doctor. Cases I see are those referred by laymen when they are in doubt about the various things that I mentioned in my speech, the factors that have an effect on the amount of fee. They send me those cases, and I have made a careful study of them. I will not say how many I see but this is just part of my job as a consultant to the claims committee on such a situation. They ask me for my opinion: "Do you feel that this is usual and customary, or, in your opinion, what would be?" I think you doctors have to assume that responsibility. You probably are already doing it, but I am saying that we have to get closer cooperation between the claims department and our other departments on these claims. They are waiting for the doctors to come through and express their opinion, but when you call a doctor or write him, be very careful and tactful and do not accuse him of dishonesty or using exorbitant fees or excessive fees. After all, I think myself that the physicians have been blamed too much. I do not think we have educated the public. They are the ones that have bought these policies, whether individual or group, and, if they are abusing it, do not blame the doctors. What we should do is just approach the doctors and ask for more details. Tell them it is a question of a major medical and that with further details we can submit our report to the claims committee, and they are perfectly satisfied.

I have yet to meet a doctor, except the first one I mentioned, who used the word *exorbitant*, who questioned my motives any time I have written or called up. You would be surprised at the courtesy you get from the profession.

The next two I am going to combine, and it will be short. May I ask whether there is a company that writes such a policy as the gentleman mentioned, adding 10 cents a day for catastrophic medical? I

imagine it could be written but I will have to ask my actuaries. I think the best advice would be to suggest to groups that they increase their basic plans to include this.

Recently, Mr. Hines, Vice President of Equitable said: "The essence of major medical insurance applies to all costs over which there is any practical control, with a few exclusions and limitations as possible. By and large hospitals are crowded. Hospital costs continue to rise, but not because of empty beds. The desperately sick sometimes wait for beds to be vacated by sniffles cases. Hospitals themselves are interested in a shift from impatient to outpatient care."

That is what we try to stress when visiting group policyholders—that these plans are not supposed to cover diagnostic procedures. The doctor has to diagnose the case to get the patient in but if the contract does not include the group laboratory and x-ray on the hospitalization plan, persuade the doctor not to put everybody in the hospital and thereby run up the bill.

DR. HORAN—I did not take the extra time to try to answer the chiropractor and osteopath question. The chiropractors and osteopaths are licensed in most of the states. Only two or three exclude the chriopractors, including New York State. If within the Medical Practice Act of the state in which they are practicing they are licensed as chiropractors, that is a limited license within the Medical Practice Act. If any of our policies provide a benefit for something that they are permitted by law to do, we recognize it and pay it. Now I do not believe faith healers are in the Medical Practice Act, but we also will accept from a Christian Science practitioner a statement of the belief that his patient had had something, which, if he were not a Christian Scientist, would have been called a cold or acute appendicitis. We will accept that report as not due proof of claim, because, after all, the claim is paid for a specific insurance loss, total disability, surgical operation, or something. We will use our other facilities that we have for investigation of claims and perhaps have a medical examiner call on that policyholder and complete the medical examiner's report. After all, you must all have some chiropractors as policy holders, and certainly you all have osteopaths, and also Christian Science practitioners or other people who follow those faiths when there is faith healing involved. If you use the limitations imposed by the state itself which permits them to practice freely within those limitations, and you have a benefit that you can pay for it, you can recognize them. You always have your own independent medical examiner's investigation as to the possibility of verifying the proof and making it due proof.

DR. SIMMONS—I cannot relinquish the office of President without feeling the great honor and the expression of friendship and trust characterizing this office. I keenly appreciate your expression of confidence and particularly your cooperation in making this meeting a success. I would be remiss if I should fail to publicly express my great appreciation to certain persons and certain groups for their special help in the activities of the past few days. I am sure that it is the opinion and thought of this meeting that Dr. Reynold C. Voss, Medical Director of the Pan American Life, has gone beyond his required duties as a member of the Convention Committee.

I do want to express my appreciation to the entire Convention Committee, headed by our Secretary, Dr. Henry B. Kirkland, and whose third member is Dr. Frank McGurl.

Additionally I would mention with appreciation the work of our Program Committee, headed by my colleague, Dr. William O. Purdy, and associated with him Dr. Norman J. Barker and the moderator of the symposium, Dr. Ralph Filson.

Additionally I want to mention the Ladies' Committee. This is important since we have about half as many ladies as we have men at this meeting. This Committee was composed of the following: Mrs. Henry B. Kirkland, Mrs. Frank J. McGurl, Mrs. William Purdy, Mrs. Reynold C. Voss, Mrs. John Boland, Mrs. Duncan T. McEwan and Mrs. Norman Barker. I think my wife very ably assisted us in the program by acting as Chairlady of that Committee.

I think we should also recognize the tremendous amount of work that has been done by our Secretary, Dr. Harry Kirkland, and also Miss Clara Rizzolo, who has served at the desk, along with two very able assistants from the Pan American Life Insurance Company.

I am informed that there have been more than 200 men registered at this meeting and nearly 100 women. I think historically it might be of interest to you to know that when we first discussed bringing the convention to New Orleans, I had some reservations in my mind as to what that might do to our attendance, and I called first some of my colleagues in Canada, and I got nothing but warm approval of the idea—I think because they saw a nice chance to come to the Sunny South and visit a part of the country they had never seen before, because they knew nothing of the program at that time, but I feel quite agreeably impressed with the attendance at this meeting.

My concluding service as President of this organization is to turn over the gavel and authority of the presidency to our incoming President, Dr. Edson E. Getman. Dr. Getman, would you come to the platform?

DR. EDSON E. GETMAN—Thank you so much for your confidence in me. This selection has meant the achievement of a lifetime, which I am most happy

to accept. I hope that within the next year we will see further progress in our Association. I am certain that we are faced with a challenge, many challenges, in the coming year. I also realize how difficult it is going to be to equal or even approach the performance of Dr. Simmons and his colleagues, displayed in the past few days.

On October 23, 24, and 25—that is Wednesday, Thursday, and Friday—next year, we will hold our meeting at the Hotel Statler in New York. I hope we will have as large an attendance as we have here.

Is there any further business to come before this meeting?

DR. WILLIAM BOLT—Mr. President, you have referred to the wonderful performance of Dr. Ralph Simmons as President. I am sure that all agree with you. This has been a very successful meeting, and he is also to be congratulated because of his initiative in bringing the meeting to a city like New Orleans. I would like to move a hearty vote of thanks to Dr. Ralph Simmons for the splendid job he has done this year.

DR. GETMAN—Do I hear a second?

DR. JAMES R. GUDGER—Second.

DR. GETMAN—Is there any further business to be brought before this meeting before we adjourn?

DR. LAURITZ S. YLVISAKER—Dr. Simmons mentioned all the work that Dr. Voss has done to make our meeting such a delightful one. I think we would all like to join with Dr. Simmons and express our appreciation to Dr. Voss, Mrs. Voss, and their daughter, Mrs. Singreen, and the entire Pan American, for their delightful party and for all they have done to make the meeting a very happy one and giving us all a delightful visit here in New Orleans.

DR. GETMAN—You have heard the motion, is there a second?

DR. SHANNON—Mr. Chairman, I think we ought to officially thank the Roosevelt Hotel management for the excellent service they have given us.

DR. GETMAN—Would you like to put that in the form of a motion?

DR. SHANNON—Yes.

DR. MONTGOMERY—Mr. Chairman, this is a period of change, as you all know. Maybe some of us haven't recognized the fact that a gentleman who has been sitting up on the platform for about a period of ten years is due to be moved uphill. That is to say, our Secretary, Harry Kirkland, will not be Secretary next year. Someone mentioned that fact to me last night and I agreed with them that we should say a word about Harry. After all, over these many years the past presidents are the ones who really know about the Secretary. Harry has done a most excellent job of running everything. As a matter of fact, he was very quiet today—I do not think he was off the platform once—but as a rule he is in and out and up and down. I think he knows more people in the Association by their first name than anybody else. He has been a tower of strength in everything that has happened, and, as a matter of fact, thinking about this last night I was reminded of some poetry that we used to know when we went to school, and I thought it sort of described Harry:

> I come from haunts of coot and hern,
> I make a sudden sally,
> And sparkle out among the fern
> To bicker down a valley
>
> And draw them all along and flow
> To join the brimming river,
> For men may come and men may go
> But I go on forever.

This time he is not going to go on forever, because he has a new job, but I would like to make this motion, that this association place on record most hearty thanks to Harry Kirkland for a job well done as Secretary of this association for the past 10 years.

DR. GETMAN—I believe we passed that motion by acclamation.

Is there any further business? If not, the meeting stands adjourned.

## COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

### POSTGRADUATE COURSES

The following courses for physicians, not previously listed, have come to the attention of the Council on Medical Education and Hospitals.

Designed to help the general surgeon relate anatomy to standard and newer surgical techniques, an intermittent course, Surgical Anatomy, for general surgeons is scheduled Nov. 18-Feb. 3, 1958, in Los Angeles. Meeting for two hours each Monday evening, the class is limited to 30 at a fee of $80 each. Requests for applications or information should be addressed to Dr. Thomas H. Sternberg, Assistant Dean for Postgraduate Medical Education, University of California Medical Center, Los Angeles 24.

A three-day continuous course in cardiovascular physiology as applied to clinical medicine will begin Dec. 13, 1957, at Mount Zion Hospital, San Francisco. This 13-hour lecture and open question period course is designed primarily for specialists in internal medicine, at a fee of $35. Inquiries should be addressed to the co-sponsor, Head of Postgraduate Instruction, University of California Medical Center, Second and Parnassas Avenues, San Francisco.

# MEDICAL NEWS

## ILLINOIS

**Pathologists Meet in Rockford.**—The Illinois Society of Pathologists will meet Dec. 7, at the Rockford Memorial Hospital, Rockford. A slide seminar will be held at 11:00 a. m. moderated by Dr. Marshall O. Alexander. Discussants include Dr. Joseph P. Weinmann, Dr. C. Bruce Taylor, and Dr. David O. Holman. The seminar will be completed after the luncheon at 1:00 p. m. followed by a business meeting. Dr. James W. Henry is president of the society and Dr. Franklin J. Moore is chairman, program committee. A few extra slide sets are available to nonmembers for $5 from Dr. James B. Hartney, St. Anne's Hospital, 4950 W. Thomas St., Chicago 51.

### Chicago

**Lectures on Cancer.**—The first of the annual Northwestern University medical school cancer lecture series was given Nov. 12 by Dr. Austin M. Brues, director, division of biological and medical research, Argonne National laboratory, on "Problems of Growth in Relation to Cancer." The six-part series has been planned to cover the advances in experimental work and to correlate the clinical aspects of the treatment and behavior of cancer. All lectures will be presented in the social room of Thorne Hall 5 to 6 p. m. Succeeding lectures will be on Dec. 10, pathology; Jan. 14, surgery; Feb. 11, radiology; March 11, obstetrics and gynecology; and April 8, medicine. Chairman of the series is Dr. William Wartman, chairman, department of pathology, at the Medical School.

## MINNESOTA

**Pilot Study on Oral Cancer.**—On Sept. 30 free mass oral cancer examinations were carried out at the Willmar Auditorium, Willmar, under the sponsorship of the Minnesota Division, American Cancer Society, with the endorsement of the Minnesota State Dental and Medical Associations. This was the culmination of a plan suggested six months before at a meeting of the Cancer Committee of the Minnesota State Dental Association. Kandiyohi County was selected for this first pilot study on the basis of size. A short postgraduate course in the diagnosis of oral cancer for the dentists was prepared by Ralph Christensen, D.D.S., and Robert Gorlin, D.D.S. A total of 1,926 individuals were examined, the examinations being carried out by 15 of the members of the Willmar Dental Study Club. The recorded data from the examination was sent to the dentist and/or physician indicated by the examinees. Four consultants were present: Dr. William F. Feller and Dr. Donald B. Shahon, Cancer Detection Center, University of Minnesota; Ralph Christensen, D.D.S., Minneapolis; and Robert Gorlin, D.D.S., School of Dentistry, University of Minnesota. Analysis of the pre-biopsy data indicates that there were some six or eight cases of probable oral cancer and in excess of a dozen cases of probable facial skin cancer. Follow-up data on suspicious lesions will be gathered periodically by the American Cancer Society. Benign tumors numbered over two dozen. A brochure is being written outlining the details of this pilot study.

## NEW JERSEY

**Hospital to Expand Rehabilitation Department.**—As part of a $2,500,000 modernization and expansion program, the Mountainside Hospital plans to expand its physical medicine and rehabilitation department at a cost of $265,000. Toward this amount, the Fannie E. Rippel Foundation, of Newark, has appropriated a grant of $100,000. Under the terms of the grant, the construction and alteration work must be started by Aug. 1, 1958, and the physical medicine and rehabilitation department must have been designated as a comprehensive type rehabilitation center by the State of New Jersey Department of Institutions and Agencies. This designation has been made. At present, the hospital offers a broad-range physical medicine rehabilitation program, including physical therapy, rehabilitation, diagnosis, occupational therapy, speech therapy, social service and clinical psychology, and splintings and bracing. Since 1953, Dr. Robert F. Dow has been in charge of the center, and will continue as it head. In addition to expansion of present facilities, many other specific needs will be met in the new rehabilitation department.

**Seminar on Unusual Tumors.**—The seventh annual Slide Seminar on Unusual Tumors, sponsored jointly by the New Jersey Society of Clinical Pathologists and the New Jersey State Department of Health, Bureau of Pathology, will be held on Dec. 7 at the Essex House, Newark, beginning at 2 p. m. Dr. Arthur P. Stout, of Columbia University College

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

of Physicians and Surgeons, New York City, will be moderator. Dr. Murray Shulman, of Irvington General Hospital, is chairman of the program committee. The New Jersey State Department of Health is represented by Elmer L. Shaffer, Ph.D., director of laboratories. Case histories and micro slides prepared in the Bureau of Pathology are being mailed to all members of the society. Interested physicians are invited.

## NEW YORK

**Personal.**—Dr. Arthur J. Bedell, Albany, has returned from Australia, Tasmania, and New Zealand, where he spoke in Sydney and Hobart and gave a series of lectures in Melbourne at the meeting of the Australian Ophthalmological Society. He was elected an honorary member of the Australian Ophthalmological Society and also of the New Zealand Ophthalmological Society.

**Honorary Award for Scientific Achievement.**—Albany Medical College has announced the creation of an annual lectureship award honoring Americans who have made "outstanding contributions in the fields of science, medicine, and teaching." First to receive the award was William Mansfield Clark, Ph.D., to whom the college paid tribute on Oct. 29. The award will be known as the Albany Medical College Honorary Lectureship Award. Dr. Clark is DeLamar emeritus professor of physiological chemistry at Johns Hopkins Medical School, Baltimore, where he has been a member of the faculty for over 30 years. Preceding his lecture, Dr. Clark was feted at a testimonial dinner, following which he was presented with a plaque designed especially for the occasion.

**Decrease in Rabies in Animals.**—The New York State Department of Health has announced that the number of animal rabies cases reported in Upstate New York is down for the second consecutive year. The department's Bureau of Epidemiology and Communicable Disease Control announced that during the first nine months of 1957 a total of 162 cases of rabies was reported from 19 counties in Upstate New York. For the same period in 1956 there were 249 cases reported, while 387 cases were reported for the first nine months of 1955. The decrease in rabies cases was largely attributed to the department's program to immunize dogs and the efforts of the State Conservation Department and some counties to reduce the fox population by trapping. Eighty-four of the 162 cases reported were cattle. There were 21 cases of feline rabies reported during the first nine months of the year. The bureau noted that there had been no significant reduction in cat rabies during the last three years.

## New York City

**Personal.**—Dr. Walter Modell, of Cornell University Medical College, has been appointed to fill a vacancy on the Committee of Revision of the Pharmacopeia of the United States. Dr. Modell will serve on the subcommittees on scope and posology for the remainder of the 1950-1960 decade.

**Hospital News.**—The annual Israel S. Wechsler Lecture will be given Dec. 13, 8:30 p. m., at the Mount Sinai Hospital, by Dr. Herbert H. Jasper, professor of experimental neurology, McGill University, Montreal, Canada, on "Progress and Problems in Brain Research."

**Huggins Memorial Lecture.**—The Phi Delta Epsilon Fraternity, Nu Chapter, will hold the 12th annual R. R. Huggins Memorial Lecture Dec. 12 at the School of Health Professions auditorium, Cornell University, at 4:30. The speaker will be Dr. Rachmiel Levine, chairman, department of medicine, Michael Reese Hospital, Chicago. The subject will be "The Oral Hypoglycemic Agents."

**University News.**—John Bruce, Regius professor of surgery, University of Edinburgh and president of the Royal College of Surgeons of Edinburgh, will speak at New York University–Bellevue Medical Center on "Simple Mastectomy and Radiation Therapy in the Treatment of Cancer of the Breast" Nov. 26, at 4 p. m. All members of the medical profession are invited.——Omicron Chapter, Phi Delta Epsilon Fraternity, will present a lecture by Dr. Charles P. Bailey of Philadelphia, at New York Medical College in the school auditorium at 8:00 p. m., Dec. 9, on "Recent Developments in Cardiovascular Surgery."

**Schoenberg Lecture.**—The Annual Schoenberg Memorial Lecture of the New York Society for Clinical Ophthalmology and the National Society for the Prevention of Blindness will be given at 8:15 p. m., Dec. 2, at the New York Academy of Medicine. Dr. Bernard Becker, chief, department of ophthalmology, Washington University School of Medicine, St. Louis, will discuss "Tonography: Experimental and Clinical Aspects." Dr. Mark J. Schoenberg, a Rumanian refugee who became a distinguished American ophthalmologist, was a founder of the New York Society and spearheaded the National Society's glaucoma control program. Since his death in 1945, the two societies have joined each year in honoring his memory. All physicians are welcome.

**Dr. Thomas Named to Chair Department of Medicine.**—Dr. Lewis Thomas has been nominated by the Board of Trustees of New York University as chairman of the department of medicine in the College of Medicine and director of the Third

Medical Division of New York City's Bellevue Hospital Center. Dr. Thomas's appointment will become effective with the retirement of Dr. William S. Tillett at the close of the 1957-1958 academic year. Currently, Dr. Thomas is chairman of the department of pathology, a position he has held since joining the university faculty in 1954. Dr. Thomas was appointed a member of the Board of Health of New York City in January, 1957. He is also a member of the Research Council of the Public Health Research Institute of New York and a consultant to both the Surgeon General, U. S. Army, and the Surgeon General of the U. S. Public Health Service. Dr. Tillett will become full-time project director for research in the field of allergy and infectious diseases. The five-year program, which began Sept. 1, was awarded to Dr. Tillett by the National Institute of Allergy and infectious Diseases of the U. S. Department of Health, Education, and Welfare.

## PENNSYLVANIA

**Booklet for Family Health Record.**—A booklet in which to keep the family health record over the years is being offered free to the public by the Medical Society of the State of Pennsylvania as an information record on immunizations, illnesses, injuries, and physical examinations. Including space for the family history, the 12-page booklet will offer data on blood types, allergies or drug sensitivity, illnesses both in hospitals or at home, a checklist of diseases occurring in the family, and also health and accident insurance information and records of insurance payments. The booklet will be mailed free to those writing to Department A, The Medical Society of the State of Pennsylvania, 230 State St., Harrisburg.

**Organize Blood Banks.**—The Pennsylvania Association of Blood Banks is undergoing organization under the sponsorship of the Commission on Blood Banks of the Medical Society of the State of Pennsylvania and with the support of the Pennsylvania Association of Clinical Pathologists. The objective of the association is to establish a state-wide blood bank clearing house similar to programs elsewhere in the country conducted under the American Association of Blood Banks. At present, no transfer of blood from one part of the state to another is contemplated, but "paper credits" will be exchanged between hospitals. Every six months, the clearing house will tally the transactions throughout the state and each blood bank will be paid by check the amount owed by the clearing house, or vice versa. Another objective is an educational program for physicians and technicians to illustrate improved methods of blood collection, preservation, and transfusion through refresher courses and workshops. Dr. Robert F. Norris, chairman of the state medical society's Commission on Blood Banks, was named temporary president of the new association, with Dr. William J. Kuhns, of Pittsburgh, vice-president. Other charter members include members of the Commission on Blood Banks of the state medical society and members of the board of directors of the Pennsylvania Association of Clinical Pathologists. Membership is open to all those interested in blood banks.

## Philadelphia

**University News.**—Dr. Frank Netter gave the Phi Rho Sigma lecture at the Temple University School of Medicine Oct. 30 on "Medical Illustration—Its History, Its Contribution and Its Practice." Dr. Netter is a fellow of the New York Academy of Medicine and a member of the Society of Illustrators and the Artists' Guild.

**Appoint Director of Research Division.**—Dr. Theodore H. Ingalls, associate professor of epidemiology, Harvard University School of Public Health, Boston, has been appointed professor of preventive medicine and epidemiology at the University of Pennsylvania, where he will be responsible for developing and directing a division of graduate research and training in the university's department of public health and preventive medicine. The head of the department is Dr. John P. Hubbard. The new division will have as one of its major objectives the training of physicians to be competent investigators in the field of noninfectious diseases. Dr. Ingalls and associates will carry on long-term research work studying methods of health examinations and techniques for the early detection of chronic diseases, this activity being supported by a five-year $400,000 grant by the W. K. Kellogg Foundation. In addition, he will develop projects for evaluating radiation hazards and for the control of congenital defects. A registry of inherited and acquired abnormalities among Philadelphians will be instituted at the West Philadelphia Health Center. A clinical registry of congenital anomalies will also be maintained for counseling purposes. Dr. Ingalls is an associate editor of the *New England Journal of Medicine* and a section editor for the *American Journal of Medical Sciences*.

**Lasker Award to Dr. Starr.**—Dr. Isaac Starr has been named to receive the 1957 Albert Lasker award of the American Heart Association "for distinguished achievement in the field of cardiovascular research." A former president of the American Society for Clinical Investigation, inventor of the first practical ballistocardiograph, and a member of the editorial board of *Circulation*, Dr. Starr is also Hartzell Research Professor of Therapeutics at the University of Pennsylvania School of Medicine, an institution

he has served for 35 years in many capacities. The Lasker award was presented to Dr. Starr at the association's scientific sessions held in Chicago in October. Comprising $1,000 and a gold statuette of the Winged Victory of Samothrace, it is conferred annually by the Albert and Mary Lasker Foundation through the American Heart Association.

## VIRGINIA

**Society News.**—The Northern Virginia Pediatric Society was organized at a meeting Sept. 24 at the Army Navy Country Club, Arlington. Dr. Arthur I. Sims was elected president; Dr. Robert Anderson, vice-president; Dr. Colin MacRae, secretary; and Dr. Francis Zinzi, treasurer. The purposes of the society are to promote the general health and welfare of children in the area and to participate in civc affairs relative to problems of juveniles.

**Personal.**—Dr. Henry B. Mulholland, professor of internal medicine, University of Virginia School of Medicine, Charlottesville, has accepted membership on the National Advisory Arthritis and Metabolic Diseases Council for the term 1957-1961. Dr. Mulholland is vice-chairman of the Council on Medical Service, and chairman of the Committee on Aging of the American Medical Association. He is a past-president of the American Diabetes Association, and of the Medical Society of Virginia.

## WASHINGTON

**Personal.**—Dr. Robert H. Williams, Seattle, professor and executive officer, department of medicine, University of Washington, has accepted membership on the National Advisory Arthritis and Metabolic Diseases Council for a four-year term beginning Oct. 1. Dr. Williams is a past-president of the American Society for Clinical Investigation.

## GENERAL

**Public Welfare Conference.**—The biennial round-table conference of the American Public Welfare Association will be at the Edgewater Beach Hotel, Chicago, Dec. 4-7. The program includes four round-table sessions and panel sessions on "Planning for Services in Public Assistance" and "Services and the Individual." Guest speaker at the opening general session will be Mr. John A. Perkins, undersecretary, Department of Health, Education, and Welfare, Washington, D. C. The speaker at the banquet will be Mr. Ernest K. Lindley, director of the Washington Bureau, *Newsweek* magazine, who will speak on "Report on the Mid-East." The closing general session will feature Wilbur J. Cohen, professor of public welfare administration, School of Social Work, University of Michigan, Ann Arbor. The registration fee is $4 for members and $7 for nonmembers. For information write the American Public Welfare Association, 1313 E. 60th St., Chicago 37.

**Society News.**—The newly elected officers of the **Academy of Psychosomatic Medicine** are: president, Dr. Bernard B. Raginsky, Montreal, Canada; vice-president, Dr. Lester L. Coleman, New York City; secretary, Dr. Wilfred Dorfman, Brooklyn; treasurer, Dr. George F. Sutherland, Baltimore; historian, Dr. Maury Sanger, Brooklyn; and president-elect, Dr. William S. Kroger, Chicago.—The following officers of the **American Academy of Ophthalmology and Otolaryngology** have been elected: Dr. John H. Dunnington, New York, president-elect; Dr. LeRoy A. Schall, Boston, president, succeeding Dr. Erling W. Hansen, Minneapolis; Drs. Bruce Fralick, Ann Arbor, Mich., David D. DeWeese, Portland, Ore., and Philip M. Lewis, Memphis, Tenn., vice-presidents; and Dr. William L. Benedict, Rochester, Minn., secretary-treasurer.—The 1958 officers of the **Clinical Orthopaedic Society** are: president, Dr. Marcus J. Stewart; vice-president, Dr. Foster Matchett; and secretary-treasurer, Dr. Charles H. Frantz. The 1958 meeting will be a combined meeting held in Denver and Colorado Springs, Colo.

**Grants for Nutrition Research.**—Grants totaling more than $473,000 have been awarded by the Nutrition Foundation to 27 research projects in universities and hospitals in this country and Canada. The grants were announced at the annual meeting of the foundation's board of trustees. During the year the nonprofit organization, supported by food and related manufacturers, will allocate more than a million dollars on research and education in the science of nutrition, including protein research, sugars research, and work on the origin and utilization of fats in the body. This year the foundation received $725,000, in addition to regular membership contributions, earmarked specifically for fat research. The three largest grants were awarded as follows:

Dr. Theodore B. Van Itallie, director of medicine, St. Luke's Hospital, New York City, $36,000 for a three-year study of human dietary patterns and serum lipids.

Dr. Donald E. Pickering, University of Oregon, Portland, $41,350, three-year grant.

Dr. Robert W. Wissler, University of Chicago, $38,000, three-year grant.

**Fellowships in Industrial Medicine.**—The University of Cincinnati's Institute of Industrial Health is offering graduate fellowships in Industrial Medicine. The institute provides training for graduates of approved medical schools who have completed at least one year of internship. The three-year course of instruction, leading to the degree of doctor of science in industrial medicine, satisfies the training requirements for certification in occupational medicine by the American Board of Preventive Medicine. Two years are devoted to intensive academic and clinical study in the field of industrial medicine. A final year is spent in residency in an industrial

medical department or in some comparable organization. Stipends for the first two years vary from $3,000 to $4,000. In the final or residency year, a fellow is compensated by the organization in which he is completing his training. A one-year course is also offered to qualified applicants with a possibility of a master of science degree. For information write the Secretary, Institute of Industrial Health, College of Medicine, Eden and Bethesda Avenues, Cincinnati 19.

**Postdoctoral Research Fellowships.**—The Division of Medical Sciences of the National Academy of Sciences–National Research Council announces the availability of postdoctoral research fellowships for 1958-1959. The Donner Fellowships for Medical Research, the National Research Fellowships in the Medical Sciences, and the James Picker Foundation Fellowships in Radiological Research provide special opportunities for experience in research in the basic medical sciences. They are intended for young people of unusual promise and ability in the early stages of preparation for careers in academic medicine and investigation. The fellowships are open to citizens of the United States and Canada, and citizens of any country are eligible for James Picker Foundation fellowships. The annual basic stipend is $3,800, with additional allowances for dependents. Applications for the academic year 1958-1959 must be postmarked on or before Dec. 1. For information write the Division of Medical Sciences, Room 309, National Academy of Sciences–National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C.

**Study of Mental Health Organizations.**—The Joint Commission on Mental Illness and Health which is conducting a study of voluntary organizations of ex-mental patients in the United States, is interested in obtaining the names and addresses of such organizations. The commission comprises representatives from 27 national agencies concerned with mental health, and is a nongovernmental agency operating under federal and private grants. It is now in the second year of a comprehensive analysis and evaluation of the United States' needs and resources for fighting mental illness and promoting mental health. The purpose of the national survey is to seek improved approaches to the nation's mental health problem, and to arrive at judgments as to how a national mental health program may best be implemented. Particular attention is being given to various organizations which seek to help the ex-mental patient readjust to community life. As part of this effort, the joint commission is seeking to determine what role voluntary ex-patient organizations may serve in the rehabilitation of the former mental hospital patient. Information about organizations of this nature should be addressed to Henry Wechsler, Ph.D., Joint Commission on Mental Illness and Health, 808 Memorial Drive, Cambridge 39, Mass.

**Grants for Drug Research Projects.**—The Institute for the Study of Analgesic and Sedative Drugs has announced that applications by research investigators for support of projects to be developed during the fiscal year beginning July 1, 1958, are now being considered. The Institute is a nonprofit organization established for the purpose of obtaining basic biological and clinical information on the commonly used non-narcotic analgesic and sedative drugs. The deadline for filing of applications is Feb. 28, 1958. Information concerning grants and applications may be obtained by writing The Institute for the Study of Analgesic and Sedative Drugs, Myrtle and McNaughton Streets, Elkhart, Ind.

**Research Program for Science Teachers.**—A special program for college science teachers is coordinated for the U. S. Atomic Energy Commission by the Institute of Nuclear Studies, at Oak Ridge, Tenn., a nonprofit educational corporation of 36 Southern universities. Most of the faculty members who participate in the program do their research at Oak Ridge National Laboratory, which is operated for the Atomic Energy Commission by Union Carbide Nuclear Company. The program enables college science-faculty members to spend from three months to a year conducting research in Oak Ridge atomic-energy installations. The activity, in less than 10 years, has given 561 teachers the opportunity of participating in new developments in nuclear energy. For the first time, a limited number of appointments are now available for research participation at the Commission's Savannah River Plant at Aiken, South Carolina. While most research participants come to Oak Ridge during the summer months, there are opportunities for appointments up to one year. The participant draws the equivalent of his university salary while in Oak Ridge. Copies of a newly issued brochure describing this program are available on request from the University Relations Division, Institute of Nuclear Studies, P. O. Box 117, Oak Ridge, Tenn.

**Study in Reproductive Physiology.**—The Planned Parenthood Federation of American has awarded a $30,000 grant-in-aid for a new three-year study designed to yield basic data on key links in the human reproductive chain. The grant is the largest single award made by the federation in its program of research aimed at development of improved contraceptive methods and improved treatment of childlessness. Since 1948, the federation has spent more than $400,000 on the program. The new study, to be conducted by Dr. Min C. Chang, of the Worcester Foundation for Experimental Biology, in Shrews-

bury, Mass., will probe the physiology of human tubal and uterine fluids. Funds for the study came from a $50,000 bequest by the late Mrs. Langbourne M. Williams, a New York civic leader.The remaining $20,000 of the bequest is being held for a study of the migration of sperms within the female tract.

**Accidents in Preschool Children.**—According to statisticians of the Metropolitan Life Insurance Company, the proportion of accidental deaths to the total number of deaths in the 1-4 age group has increased from 12% to nearly 30% in two decades. While the death rate from disease in this age group was being reduced from 417.3 to 82.4 per 100,000—between 1934-1935 and 1954-1955, the corresponding decrease for fatal accidents was much smaller—from 56.5 to 33.1 per 100,000. Accidents take about 4,800 lives each year among preschool children, more than twice the deaths from pneumonia and influenza, which ranks second among the causes of death. Motor vehicle accidents are responsible for about one-third of the accidental deaths in this age group. The majority of motor vehicle victims are injured on streets or highways. Conflagrations and burns, drowning, and poisoning by solids or liquids also rank high on the list of child killers, with 24%, 13%, and 7%, respectively, of the accident fatalities in 1954-1955. Leaving children without adequate supervision in the home is an important factor in deaths from fires. The youngest children are most vulnerable to drownings, two-thirds of such deaths in the 1-4 age group occurring at ages 1 and 2. The largest number of the deaths from poisoning occur from age 1 to age 2.

**Fellowship in Clinical Investigation.**—The medical section of the American Drug Manufacturers Association announces the establishment of a fellowship for training in clinical investigation under the direction of Dr. Louis C. Lasagna, assistant professor of medicine and assistant professor of pharmacology and experimental therapeutics at Johns Hopkins University, Baltimore.

This section of the American Drug Manufacturers Association is composed of medical directors and their associates from the ethical pharmaceutical manufacturing firms in the United States. These physicians are thus in some measure responsible for the clinical evaluation of the new therapeutic agents which are developed in this country. They uniformly subscribe to the principle that, for very practical reasons, an early and accurate appraisal of the utility and safety of any new drug is much to be desired.

The section has discussed at length the difficulties attendant upon new drug evaluation and have expressed concern regarding the relative lack of specially trained clinical investigators with adequate facilities to carry out and interpret such studies. Capable investigators are now in existence, but the increasing number of potentially valuable new agents now being developed, as well as the demands of teaching assignments and the exigencies of medical practice, makes the current supply inadequate for the prompt and efficient completion of all the critical studies which new drugs demand and deserve.

Further, it has been apparent that at only a very few institutions of medical education is a formal effort being made to train individuals in this critical area of medical research. It was believed that such training would be stimulated by initiating a fellowship which would allow individuals who have an adequate research and clinical background to continue their training under a recognized authority in the field. Accordingly, it has been possible to collect funds from the member firms of the American Drug Manufacturers Association for this purpose and to find in Dr. Lasagna an educator, clinician, and researcher ideally suited by training, temperament, inclination, and facilities to carry out an effective program.

The initial fellowship is in the nature of an experiment. It has been established for a two-year period at $7,500 per year, but the actual duration and expense of such training must be confirmed by experience. It is hoped that if this pilot trial is successful the program may be broadened to include other institutions and to provide for more than one fellow. It is also hoped that this program will act as a "seeding" operation in that individuals so trained may establish similar departments of similar training in other educational institutions, with the result that in this manner the adequate training of appreciable numbers of individuals qualified to conduct clinical investigation will be achieved.

The medical section feels that individuals so trained should prove not only able investigators in their own right but better educators and clinicians as well. As a subsidiary goal of this effort, it is hoped that eventually a more adequate supply of suitably trained individuals would be available for employment in the medical departments of the pharmaceutical industry, since it follows that the employment of individuals with sound training and critical judgment will do much to raise the standard of new drug evaluation in this country.

## LATIN AMERICA

**Meeting of University Professional Men in Uruguay.**—The "Agrupación Universitaria del Uruguay" (University Association of Uruguay), an organization which brings together graduates from the different faculties of the University of Montevideo, is organizing for Nov. 24-30 the "Primeras Jornadas Interamericanas de Profesionales Universitarios" (The First Interamerican Meeting of University Professional Men and Women) in conjunction with the First Uruguayan National Convention of University Men and Women. These meetings will be held un-

der the patronage of the Ministry of Education and Social Security and of the University of Montevideo. The subjects on the agenda include national problems from the social, political, juridical, and economic points of view; responsibility of university men and women; professional associations; university graduates and public office; recognition of university status; appointments to technical posts; graduate professionals in small communities; vocational orientation; codification of professional ethics; and retirement. Interested persons may communicate with Dr. Carlos A. Estapé, Agrupación Universitaria del Uruguay, Avenida Agraciada 1464, Montevideo (Uruguay).

# EXAMINATIONS AND LICENSURE

## BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 17-19. Sec., Dr. D. G. Gill, State Office Building, Montgomery 4.

COLORADO:* *Examination.* Denver, Dec. 3-4. Exec. Sec., Mrs. Beulah H. Hudgens, 715 Republic Bldg., Denver 2.

CONNECTICUT:* *Homeopathic.* Derby, Dec. 9. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, Jan. 14-16. *Reciprocity.* Dover, Jan. 23. Dr. Joseph S. McDaniel, Professional Bldg., Dover.

IDAHO: *Examination and Reciprocity.* Boise, Jan. 13-15. Ex. Sec., Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

IOWA:* *Examination.* Des Moines, Dec. 2-4. Exec. Sec., Mr. Donald V. Saf, State Office Building, Des Moines 19.

KENTUCKY: *Examination.* Louisville, Dec. 9-11. Sec., Dr. Russell E. Teague, 620 South Third St., Louisville 2.

LOUISIANA: *Examination and Reciprocity.* New Orleans, Dec. 5-7. Sec., Dr. Edwin H. Lawson, 930 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Examination.* Baltimore, Dec. 10-13. Sec., Dr. Frank K. Morris, 1211 Cathedral St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, Jan. 14-17. Sec., Dr. Robert C. Cochrane, 37 State House, Boston.

MISSISSIPPI: *Reciprocity.* Jackson, December. *Examination.* Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson 113.

NEBRASKA:* *Examination.* Omaha, June. Sec., Mr. Husted K. Watson, Room 1009, State Capitol Bldg., Lincoln 9.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Mar. 12-14. Sec., Dr. Mary M. Atchison, 107 State House, Concord.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, Dec. 10-13. Sec., Dr. Stiles D. Ezell, 23 South Pearl St., Albany 7.

NORTH CAROLINA: *Endorsement.* Southern Pines, Jan. 11. Sec., Dr. Joseph J. Combs, Professional Bldg., Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, Jan. 9-12. *Reciprocity.* Grand Forks, Jan. 12. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Examination.* Columbus, Dec. 17-19. Dr. H. M. Platter, 21 W. Broad St., Columbus 5.

OKLAHOMA:* *Endorsement.* Oklahoma City, Dec. 14-15. *Examination.* Oklahoma City, June 3-4. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, Jan. 15-16. Final date for filing application is December 16. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia, January. Acting Sec., Mrs. Margaret G. Steiner, Box 911, Harrisburg.

SOUTH CAROLINA: *Examination.* Columbia, Dec. 10. Sec., Dr. H. E. Jarvey, Jr., 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination.* Sioux Falls, Jan. 21-22. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE:* *Examination.* Memphis, Dec. 18-19. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis 3.

TEXAS:* *Examination and Reciprocity.* Fort Worth, Dec. 5-7. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, July 9-11. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City 1.

VERMONT: *Examination and Reciprocity.* Burlington, Jan. 29. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Reciprocity.* Richmond, Dec. 4. *Examination.* Richmond, Dec. 5-7. Address: Office of the Secretary, 631 First St., S.W., Roanoke.

WASHINGTON:* *Examination.* Seattle, Jan. 13-15. Sec., Mr. Thomas A. Carter, Capitol Bldg., Olympia.

WEST VIRGINIA: *Examination.* Charleston, January. Sec., Dr. Newman H. Dyer, State Office Bldg., No. 3, Charleston 5.

WISCONSIN:* *Examination.* Madison, January. Sec., Dr. Thomas W. Tormey, Jr., 1140 State Office Bldg., Madison.

WYOMING: *Examination and Reciprocity.* Cheyenne, Feb. 3. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application in Anchorage and Juneau. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: *Subject to Call.* Act. Sec., Dr. S. F. Provencher, Agana.

HAWAII: *Examination.* Honolulu, Jan. 13-14. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

PUERTO RICO: *Examination.* San Juan, March 4-7. Sec., Mr. Joaquin Mercado Cruz, Box 9156, Santurce.

## BOARDS OF EXAMINERS IN THE BASIC SCIENCES

IOWA: *Examination.* Des Moines, Jan.14. *Reciprocity.* Des Moines, Jan. 13. Sec., Dr. Elmer W. Hertel, Waverly.

KANSAS: *Examination.* Kansas City, Nov. 25-26. Sec., Dr. R. E. Stowell, Kansas City 12.

MICHIGAN: *Examination.* Detroit and Ann Arbor, Feb. 14-15. Sec., Mrs. Anne Baker, 116 Stevens T. Mason Bldg., W. Michigan Ave., Lansing.

NEVADA: *Examination.* Reno, Dec. 3. Sec., Dr. Donald G. Cooney, Box 9005, University of Nevada, Reno.

OKLAHOMA: *Examination.* Oklahoma City, April 4-5. Sec., Dr. E. F. Lester, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, Dec. 7. Sec., Dr. Earl M. Pallett, Box 5175, Eugene.

RHODE ISLAND: *Examination.* Providence, Nov. 20. Administrator of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: *Examination.* Vermillion, Dec. 6-7. Sec., Dr. Gregg M. Evans, 310 E. 15th St., Yankton.

TENNESSEE: *Examination.* Memphis, Dec. 13-14. Sec., Dr. O. W. Hyman, 62 S. Dunlap St., Memphis.

WISCONSIN: *Examination.* Milwaukee, Dec. 7; Madison, March 29. Sec., Mr. William H. Barber, 621 Ransom St., Ripon.

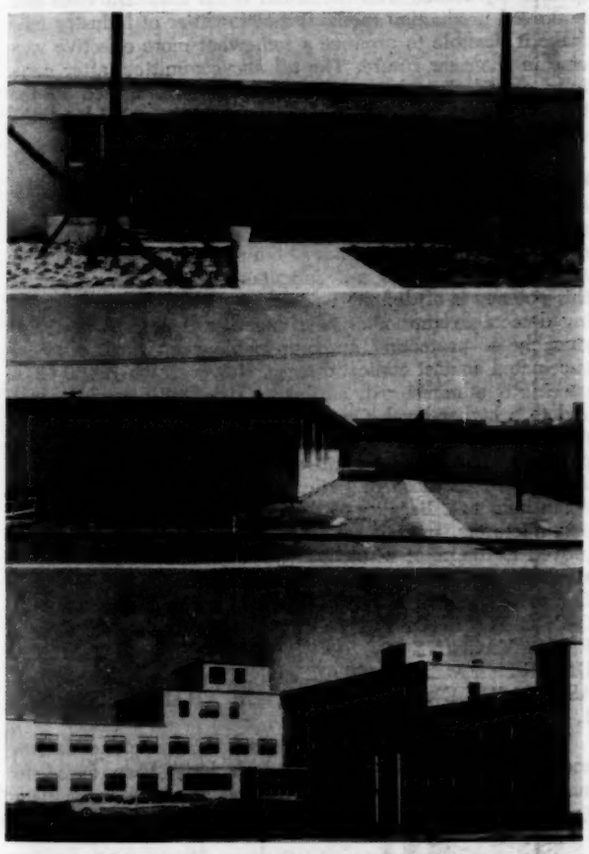
*Basic Science Certificate required.

# GOVERNMENT SERVICES

## AIR FORCE

**Personal.**—Dr. Elmer Hess, national consultant in urology to the surgeon general, paid a two-day visit in August to the 7244th U. S. A. F. Hospital and other United States military installations in Saudi Arabia and the Middle East.

**New Air Force Hospitals.**—The following U. S. Air Force hospitals are three of a total of eight completed during the fiscal year 1957. Seven new dispensaries also were completed and contracts were awarded for five additional hospitals and 13 dispensaries, scheduled for completion in 1958.



*Top,* 4226th U. S. A. F. Hospital, Homestead Air Force Base, Florida. *Center,* 1605th U. S. A. F. Hospital, Lajes Field in the Azores. *Bottom,* 4050th U. S. A. F. Hospital, Westover Air Force Base, Massachusetts.

The 4226th Air Force Hospital, an air-conditioned, 100-bed facility on a 150-bed chassis, is constructed of concrete blocks with an exterior finish of stucco. Acoustical tile ceilings in corridors and offices reduce noise. Obstetric, general medical, aviation medicine, and surgical services as well as x-ray, laboratory, and pharmacy are provided.

The 1605th Air Force Hospital, a single-story 150-bed facility, provides the following services: internal medicine, general surgery, obstetrics and gynecology, aviation medicine, and outpatient. Ancillary service support includes well-equipped laboratory, x-ray, pharmacy, and physiotherapy departments.

The 4050th Air Force Hospital, a 100-bed facility, provides medical and surgical care to military personnel and their dependents. Its mission is accomplished through a preventive medicine program, an aviation medicine program, and complete clinical medicine coverage.

## ATOMIC ENERGY COMMISSION

**Research Grants.**—The U. S. Atomic Energy Commission has announced the award of 67 unclassified life science research contracts in medicine, biology, environmental sciences, radiation instrumentation, and special training. The contracts were awarded to universities and private institutions as part of the continuing policy of assisting research and development in fields related to atomic energy as specified in the Atomic Energy Act. Fifteen of the awards, which cover a period of one year, are new projects; eight in the field of medicine. Fifty-two contract renewals for one year were awarded to allow for continuation of research already in progress; 21 of these are in medical sciences. The largest contract, of $72,769, was awarded to Dr. Sidney Farber, of the Children's Medical Center, Children's Cancer Research Foundation, Boston, for the study of "The Nature of Bleeding in Pancytopenia with Special Regard for Thrombocytopenia and the Vascular Defect."

## NAVY

**Personal.**—Capt. Ralph Chandler Parker Jr., formerly chief of medicine at the U. S. Naval Hospital, Bethesda, Md., retired Sept. 1, with the rank of rear admiral. He has been appointed director of professional affairs of the Rochester Regional Hospital Council, Rochester, N. Y.

Capt. George N. Raines attended the International Congress of Psychiatry in Zurich, Switzerland, held from Sept. 1 to 7, as a member of the American Delegation of the American Psychiatric Association. Captain Raines is head of the neuropsychiatry branch, professional division, Bureau of Medicine and Surgery. Capt. Felix H. Ocko, chief of neuropsychiatry at the U. S. Naval Hospital, St. Albans, Long Island, N. Y., also attended the congress.

## VETERANS ADMINISTRATION

**Personal.**—Dr. Stanley B. Lindley, director, professional services, VA Hospital, Knoxville, Iowa, has been appointed manager of the VA Hospital

at St. Cloud, Minn., succeeding the late Dr. Claud Lewis, who died in June, 1957.—Dr. Julius L. Wilson, director, Henry Phipps Institute, University of Pennsylvania, Philadelphia, has been appointed chief consultant to the VA director of tuberculosis service. Dr. Wilson has been director of medical education for the American Trudeau Society for the past five years, and a VA consultant for more than 10 years.

## PUBLIC HEALTH SERVICE

**Increase in Potency Requirements for Monovalent Asian Strain Influenza Vaccine.**—Dr. Roderick Murray, director, Division of Biologics Standards, National Institutes of Health, Bethesda, Md., has submitted the following brief narrative statement on recent changes in the potency requirement for monovalent Asian strain influenza vaccine.

In response to the questions raised by a number of physicians who have inquired about the effectiveness of Asian strain influenza vaccine, it is considered desirable to report briefly on the recommendations of an *ad hoc* committee advisory to the Division of Biologics Standards which convened at the National Institutes of Health, on Sept. 26, to consider the data available concerning the degree to which Asian strain influenza vaccine provides protection against this illness.

The Asian strain influenza virus was identified as a new strain at Walter Reed Army Institute of Research in May. Cultures were provided to industrial, governmental, and other laboratories for test purposes within a few days after identification. Based on those test results, standards for Asian influenza vaccine were established in July. By August, the first lots of vaccine were tested and released for civilian and military use. As of Oct. 4 some 16 million cubic centimeters of vaccine have been released and roughly 11 million cubic centimeters have been shipped for use. Current industrial estimates of future supplies exceed original projections, and it now appears possible that the goal—of 60 million cubic centimeters by Feb. 1—may be reached by Dec. 1.

It is not possible to say what epidemiologic pattern Asian influenza may follow in the months ahead. It is known, however, that thus far the characteristics of the illness have not changed as it has spread; the illness continues to be relatively mild. And it must be assumed that the incidence of Asian strain influenza will follow a typical course, with continuing outbreaks across the country and with the possibility that it may become epidemic in many places simultaneously and without warning. If this should happen, the nation will have been as well prepared as it is possible to be against this illness this year.

A vital part of the preparation is in the protection the vaccine gives the individual. Although the rapid sequence of events makes it impossible to measure in precise terms the amount of protection the Asian influenza vaccine provides, there is ample evidence that the present vaccine is effective. The evidence of effectiveness is, first, 15 years of experience with influenza vaccines which, although different virus strains were used, were comparable to the present Asian influenza vaccine; second, studies by government, industrial, and other laboratories show that subcutaneous administration of 1 cc. of the present vaccine causes a majority of persons to develop antibodies against the disease; and third, preliminary data from several current studies show that the vaccine does give protection against actual infection.

Few vaccines are 100% effective. One recalls experience with the Salk poliomyelitis vaccine, for example. Careful and extensive field trials prior to its licensing indicated that it was from 60 to 80% effective; today, we can see in rapidly declining poliomyelitis incidence figures the benefits derived from that less than perfect vaccine. Yet during the three years that poliomyelitis vaccine has been in use, ways to increase still further the measure of protection it affords have been sought. Change, directed toward improvement, is the natural course of events during the development of a biological product.

For the Asian strain influenza vaccine, the potency requirements established in July by the Public Health Service Division of Biologics Standards were high in the light of the then available information on the growth characteristics of the virus and its capacity for eliciting antigenic response. Subsequent developments have confirmed the protection afforded by vaccine meeting these requirements.

Within the last several weeks, it has become apparent that greater experience with the Asian strain influenza virus and improved production methods and facilities of industry now make it possible to produce a somewhat more effective vaccine in the near future. The *ad hoc* committee, after carefully considering the available information, agreed to the following recommendation which was transmitted to the surgeon general of the Public Health Service.

"The Committee has reviewed the data dealing with serologic responses and protective effects elicited in man by Asian monovalent influenza vaccine having an antigenic potency of 200 CCA [chick cell agglutination] units. The recent information, like that obtained earlier, indicates that administration of 1.0 ml. subcutaneously of a vaccine of this potency is of definite value. Thus, it is capable of eliciting detectable antibodies in a majority of persons and presumably of protecting an appreciable proportion of those vaccinated against clinical disease. However, when 400 CCA vaccine is administered, antibodies develop in more people and to a higher level. On the basis of all previous information this should induce more effective immunity more promptly. Indeed, the antibody levels in such persons are comparable to those in patients who have recovered from Asian influenza. Because of the intense efforts of the vaccine manufacturers, production methods and facilities have improved to the point where 400 CCA vaccine might be made available for general use in the near future. Therefore, the Committee recommends the following: THAT THE ANTIGENIC POTENCY OF ASIAN MONOVALENT INFLUENZA VACCINE BE INCREASED FROM 200 CCA UNITS PER ML. TO 400 CCA UNITS PER ML. AS SOON AS FEASIBLE AND NOT LATER THAN DECEMBER 1, 1957."

The surgeon general has accepted this recommendation, and, accordingly, the manufacturers have been asked to make this change as soon as possible, and not later than Dec. 1 of this year.

**Dr. Masland Appointed Assistant Director.**—Dr. Richard L. Masland, formerly professor of neurology and psychiatry, Bowman Gray School of Medicine, Winston-Salem, N. C., has been appointed assistant director of the National Institute of Neurological Diseases and Blindness, a division of the National Institutes of Health.

Born in Philadelphia in 1910, Dr. Masland received his M.D. degree at the University of Pennsylvania and was an associate in neurology at the university from 1940 to 1946. While on leave of absence, he served with the U. S. Army between 1942 and 1945, mostly as director of the department

of physiology, School of Aviation Medicine, Randolph Field, Texas. He joined the staff of the Bowman Gray School of Medicine in 1947 as an assistant professor, and in July, 1955, took a year's leave of absence to accept appointment as research director of the National Association for Retarded Children. He is a diplomate of the American Board of Neurology and Psychiatry, a member of the American Academy of Neurology, and was president of the American League Against Epilepsy, professional group, in 1954.

**Psychopharmacology Information Service.**—A clearing house of information on psychopharmacology is being established by the National Institute of Mental Health. A collection of the literature in this field, including pharmacological, clinical, behavioral, and experimental studies of the ataraxic, psychotomimetic, and other centrally acting drugs, will be classified and coded. When enough materials have been assembled, the center plans to offer bibliographic and reference service as well as the preparation of critical and analytic reviews of special topics in the field. The center invites persons working in this field to provide three copies of any papers that deal with their work—reprints, manuscripts, progress reports, informal mimeographed reports, papers read at meetings, or abstracts. Letters outlining work in progress would also be welcome. All materials should be addressed to the Technical Information Unit, Psychopharmacology Service Center, National Institute of Mental Health, 8719 Colesville Rd., Silver Spring, Md.

**Decline in Prevalence of Tuberculosis.**—The first official survey of the prevalence of tuberculosis in this country in five years shows that, although the number of active cases has declined almost 30%, there are still about 250,000 persons with the disease in its active form, the Public Health Service and the National Tuberculosis Association reported jointly on Oct. 30. The survey reveals that, despite intensive efforts by groups and health departments in recent years, almost 40% of the active cases are unknown to medical and health authorities and that these persons are not receiving any type of care. The current estimates of nationwide tuberculosis prevalence reveal that in 1956 some 2 million persons in the United States were ill or had been ill with tuberculosis. This is about the same number found in the last survey in 1952.

**Research on Cerebral Palsy and Mental Retardation.**—The Public Health Service has announced that grants of $168,820 will be given to New York Medical College and $147,946 to the University of Oregon Medical School for research into the causes of cerebral palsy, mental retardation, and allied neurological disorders. This brings to 11 the number of medical schools and hospitals which have joined the National Institute of Neurological Diseases and Blindness in a long-range study in this field.

The broad-scale investigation—which may last for 10 years or longer—is specifically concerned with brain damage occurring during the perinatal period. It will seek to evaluate such factors as lack of oxygen, brain injuries, blood incompatibility (the Rh factor), infections during pregnancy, and hereditary factors. About 15 institutions are expected to participate in the study and about 8,000 cases will be under investigation annually. There are an estimated 450,000 persons in the United States in whom cerebral palsy appeared in infancy or childhood. It is also estimated that about 4,500,000 persons are mentally retarded; about one-third of these are children.

Dr. Pearce Bailey, director, National Institute of Neurological Diseases and Blindness, which is coordinating the study and serving as a central laboratory, said the study is bringing together the talents of many neurologists, obstetricians, pediatricians, orthopedic surgeons, embryologists, pathologists, geneticists, and others.

**Appoint Consultant on Radiation.**—Surgeon General Leroy Burney has appointed Dr. Russell H. Morgan, professor of radiology at Johns Hopkins University, Baltimore, as a special consultant on public health aspects of radiation. Dr. Morgan will serve as principal advisor in the development of the service's radiological health program which is concerned with protecting the population from harmful effects of radiation from various sources. He will also assist in the coordination of Public Health Service activities in research, epidemiological studies, environmental monitoring, and technical assistance to the states. Prior to his present position, as radiologist-in-chief at Johns Hopkins University Hospital, Dr. Morgan was associate professor of radiology at the University of Chicago.

## MISCELLANEOUS

**Science Foundation Publications Available.**—National Science Foundation publications are available to all scientists who have need for them. Lists of publications are available from the foundation. Requests should be addressed to the Publications Office, National Science Foundation, Washington 25, D. C. The central task of the National Science Foundation, which was established by Congress, is the promotion or cultivation of science in the United States.

# DEATHS

**Mellen, Dan** ✱ Rome, N. Y.; born in Oswego, Sept. 3, 1889; University of Buffalo School of Medicine, 1918; fellow of the International College of Surgeons and the American College of Surgeons; member of the House of Delegates of the American Medical Association in 1956; past-president of the Fifth District Branch and the Medical Society of the State of New York, of which he was a council member since 1945, serving two terms as chairman of the board of trustees; past-president of the Oneida County Medical Society and the Mayo Clinic Alumni Association; received the annual Distinguished Service Award of the Utica Academy of Medicine; entered the Mayo Foundation in Rochester, Minn., in July, 1918, and left July, 1921; member of the World Medical Association; formerly commissioner of public welfare; served as a member of the Joint Hospital Survey and Planning Commission of the Syracuse Regional Hospital Planning Council; for many years associated with the Rome Hospital and Murphy Memorial Hospital; served on the board of managers of the Rome State School; died in the Genesee Hospital in Rochester Sept. 2, aged 67, of coronary thrombosis.

**Sandy, William Charles,** Ovid, N. Y.; born in Troy Sept. 9, 1876; Columbia University College of Physicians and Surgeons, New York City, 1901; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association, of which he was formerly secretary-treasurer and past-president; past-president of the Pennsylvania Psychiatric Association; an associate member of the American Medical Association; veteran of World War I; assistant physician at the New Jersey State Hospital, Trenton, from 1905 to 1913, and the Kings Park (N. Y.) State Hospital from 1913 to 1915; medical director of the South Carolina State Hospital in Columbia from 1915 to 1917; assistant superintendent of the Connecticut State Hospital in Middletown, 1917-1918; psychiatrist, State Committee for Mental Defectives, New York, from 1919 to 1921; from 1921 to 1944 director of the Bureau of Mental Health, State Department of Welfare of Pennsylvania; served as associate editor of the *American Journal of Psychiatry*; died in Geneva (N. Y.) General Hospital Sept. 7, aged 80, of pneumonia following a fracture of his leg.

**French, Sanford Williams,** Colonel, U. S. Army, retired, San Antonio, Texas; born at Rochester, N. Y., Sept. 12, 1881; George Washington University School of Medicine, Washington, D. C., 1909; service member of the American Medical Association; member of the American College of Chest Physicians, Association of Military Surgeons of the United States, American College of Allergists, and the International Association of Allergists; fellow of the American College of Physicians; for eight years chief petty officer in the Navy with service in Guam and the Philippine Islands; entered the U. S. Army in 1910; rose through the various grades to that of colonel in 1937; veteran of World Wars I and II; served at various posts throughout the United States as well as in Hawaii and Panama; in 1926 established the first allergy clinic in the U. S. Army at Fort Sam Houston; retired Dec. 1, 1944; died in the Brooke Army Hospital, Fort Sam Houston Aug. 21, aged 75, of emphysema and cor pulmonale.

**Harter, Harry Morton** ✱ Kew Gardens, N. Y.; born in Breslau, Germany, July 6, 1899; Schlesische-Friedrich-Wilhelms-Universitat Medizinische Fakultat, Breslau, Prussia, Germany, 1924; fellow of the American Psychiatric Association; member of the Association for Research in Nervous and Mental Diseases and the American Psychopathological Association; served with the Veterans Administration in Brooklyn, and on the staffs of the Horace Harding Hospital in Elmhurst, Hillside Hospital in Glen Oaks, Triboro, Jamaica, and Queens General hospitals in Jamaica, N. Y., and the Kew Gardens Hospital, where he died Sept. 21, aged 58.

**Clark, Coryell** ✱ Cold Spring, N. Y.; born Nov. 29, 1878; Cornell University Medical College, New York City, 1900; during World War II received a citation for his service as a physician for the Selective Service Board; served as health officer; for many years physician for the fire department of Cold Spring; president of the National Bank of Cold Spring; since 1916 surgeon for the New York Central Railroad; chairman, medical board, chairman of the board of trustees, and chief of medical staff, Julia L. Butterfield Memorial Hospital, where he died Sept. 10, aged 78, of carcinoma of the lungs.

**Cutler, Jacob W.** ✱ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1925; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; member of the American College of Chest Physicians and the American Trudeau Society; director of the Delaware County Tuberculosis and Health Association; medical director of the Wawa (Pa.) Chest Hospital; consultant

✱ Indicates Member of the American Medical Association.

for Taylor (Pa.) Hospital, and Chester and Crozer hospitals in Chester, Pa.; died in Wallingford, Pa., Aug. 31, aged 56.

**Chambers, Noble Russell,** Syracuse, N. Y.; Syracuse University College of Medicine, 1920; member of the Medical Society of the State of New York and the American Psychiatric Association; specialist certified by the American Board of Psychiatry and Neurology; formerly on the faculty of his alma mater, on the staffs of the Hospital of the Good Shepherd, General Hospital, Syracuse Memorial Hospital and Syracuse Psychopathic Hospital, and associated with the Veterans Administration; died Sept. 14, aged 62.

**Hooks, James Moore,** Ventura, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1895; fellow of the American College of Surgeons; at various times president and secretary of the Lamar County (Texas) Medical Society; for many years practiced in Paris, Texas, and served as examining physician for the local draft board during World Wars I and II; past-president of the medical staffs, St. Joseph's and Lamar hospitals in Paris, Texas; died in Ojai Aug. 24, aged 85, of renal carcinoma.

**Bruder, Victor Francis Joseph** ✦ La Crosse, Wis.; Loyola University School of Medicine, Chicago, 1937; certified by the National Board of Medical Examiners; specialist certified by the American Board of Radiology; member of the American College of Radiology; past-president of the Winona County (Minn.) Medical Society; past-secretary of the La Crosse County Medical Society; on the staff of Lutheran Hospital, where he died Sept. 8, aged 57, of cerebral hemorrhage and hypertension.

**Diasio, Fortunato Anthony** ✦ New York City; born in Italy March 27, 1899; Yale University School of Medicine, New Haven, Conn., 1922; specialist certified by the American Board of Dermatology and Syphilology; fellow of the American Academy of Dermatology and Syphilology and the Society for Investigative Dermatology; served on the staffs of St. Elizabeth's, Lincoln, and Columbus hospitals; died in the Flower and Fifth Avenue Hospitals Aug. 26, aged 58, of coronary thrombosis.

**O'Connor, Francis Edward** ✦ Kingston, N. Y.; University of Vermont College of Medicine, Burlington, 1925; fellow of the American College of Surgeons; specialist certified by the American Board of Obstetrics and Gynecology; served as vice-president of the Ulster County Board of Health; first president of the Ulster County Branch of the American Cancer Society; on the staffs of the Benedictine Hospital and the Kingston Hospital; died Sept. 12, aged 58, of uremia and nephritis.

**Power, Howard Anderson** ✦ Pittsburgh; University of Pittsburgh School of Medicine, 1920; professor of obstetrics and chairman of the department of his alma mater; specialist certified by the American Board of Obstetrics and Gynecology; past-president of the Pittsburgh Obstetrical and Gynecological Society; fellow of the American College of Surgeons; associated with the Elizabeth Steel Magee Hospital; died Sept. 3, aged 64, of coronary heart disease.

**Ryan, Linus Martin** ✦ St. Louis; St. Louis University School of Medicine, 1912; senior instructor in otolaryngology at St. Louis University School of Medicine; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; veteran of World War I; on the staff of St. John's Hospital; affiliated with St. Mary's Group of Hospitals; died Sept. 12, aged 69, of arteriosclerosis.

**Affelder, William Maurice** ✦ Mount Vernon, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1929; died Sept. 20, aged 51.

**Aldrich, Walter Seward** ✦ Sacramento, Calif.; Northwestern University Medical School, Chicago, 1930; fellow of the American Psychiatric Association; veteran of World War II; on the staff of Sutter Community Hospital; consulting psychiatrist, Folsom Prison; died Sept. 7, aged 56, of coronary occlusion.

**Allen, James Marvin,** Trenton, Tenn.; University of Tennessee College of Medicine, Memphis, 1942; died Aug. 21, aged 38.

**Annis, Sumner Bryden** ✦ Maynard, Mass.; Boston University School of Medicine, 1911; veteran of World War I; served on the staff of the Worcester Memorial Hospital in Newburyport; died Aug. 27, aged 72, of acute coronary occlusion.

**Bear, Wilson Grant** ✦ Monroe, Wis.; Rush Medical College, Chicago, 1903; served on the staffs of the Green County and St. Clare's hospitals; died Sept. 18, aged 84, of heart disease.

**Beck, Tilden Jacob** ✦ Cincinnati; Medical College of Ohio, Cincinnati, 1901; veteran of the Spanish–American War; served as physician at St. Aloysius Orphanage and the Convent of the Good Shepherd; on the honorary staff, Bethesda Hospital, where he died Sept. 11, aged 80, of chronic myocarditis and arteriosclerosis.

**Beckwith, Edgar Williams,** Lake George, N. Y.; Columbia University College of Physicians and Surgeons, New York City, 1913; served on the staffs of St. Luke's and Lying-in hospitals in New York City; formerly medical director of the Equitable

Life Assurance Society; died in the Glens Falls (N. Y.) Hospital Sept. 24, aged 69, of cerebrovascular thrombosis.

**Beson, Clyde W.,** Claremore, Okla.; Ensworth Medical College, St. Joseph, Mo., 1906; veteran of the Spanish–American War; formerly city physician for Oklahoma City; served as state health commissioner and as medical adviser of the state industrial commission; one of the organizers and original directors, Rogers County Bank; died in the Hillcrest Hospital in Vinita Sept. 3, aged 78, of arteriosclerosis.

**Boaz, John Jordan** ✱ Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1895; served as police surgeon; died in St. Vincent's Hospital Sept. 2, aged 81, of uremia.

**Boesel, Stephen William** ✱ Niles, Ohio; Western Reserve University School of Medicine, Cleveland, 1915; city health commissioner; died in Youngstown, Sept. 3, aged 67, of cerebral arteriosclerosis.

**Borchardt, Melvin A.** ✱ New London, Wis.; Marquette University School of Medicine, Milwaukee, 1925; served as a member and president of the board of education; on the staff of the Borchardt Clinic Memorial Hospital, where he died Sept. 12, aged 58, of coronary thrombosis.

**Boyer, Howard C.** ✱ Council Bluffs, Iowa; Hering Medical College, Chicago, 1895; the Hahnemann Medical College and Hospital, Chicago, 1910; on the staff of Mercy Hospital, where he died Sept. 11, aged 85, of myocardial infarction.

**Chase, Carl Clarence** ✱ Middletown, Conn.; University of Vermont College of Medicine, Burlington, 1924; specialist certified by the American Board of Ophthalmology; member of the American Academy of the Ophthalmology and Otolaryngology; consultant ophthalmologist at Connecticut State Hospital; senior ophthalmologist at Middlesex Memorial Hospital, where he died Sept. 17, aged 56, of myocardial infarction.

**Chesnut, Lee,** Mount Vernon, Ky.; University of Louisville School of Medicine, 1909; died July 20, aged 77, of heart disease.

**Choate, Joseph Lynn,** Los Angeles; Johns Hopkins University School of Medicine, Baltimore, 1910; died in St. John's Hospital, Santa Monica, Calif., Sept. 5, aged 74, of cerebral hemorrhage.

**Collinson, Thomas W.,** Scobey, Mont.; University of Toronto Faculty of Medicine, Toronto, Ontario, Canada, 1905; formerly associated with the U. S. Public Health Service; president of the Citizens State Bank; died Sept. 2, aged 80, of mesenteric thrombosis.

**Darrah, Leon Calvin** ✱ Reading, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1912; fellow of the American College of Surgeons; past-president of the Berks County Medical Society; veteran of World War I; associated with the Reading General Hospital; died Sept. 7, aged 67, of cerebral hemorrhage.

**Darrow, Clarence Allison** ✱ Dubuque, Iowa; State University of Iowa College of Medicine, Iowa City, 1934; certified by the National Board of Medical Examiners; member of the American Academy of General Practice; county coroner; on the staff of the Finley Hospital; died Aug. 28, aged 49.

**Dillon, Albert Le Roy,** South Laguna, Calif.; Illinois Medical College, Chicago, 1903; formerly practiced in Clovis, N. Mex., where he was a member of the municipal board of education and on the staff of Clovis Memorial Hospital; died in the Hoag Memorial–Presbyterian Hospital, Newport Beach, Sept. 8, aged 75, of cerebrovascular accident.

**Draesel, William Albert,** Union City, N. J.; New York University Medical College, New York City, 1897; for many years physician for the city board of education; died in Hackensack (N. J.) Hospital Sept. 10, aged 82.

**Estes, Florella,** Fontana, Calif.; Boston University School of Medicine, 1890; died Sept. 6, aged 97, of chronic cardiovascular disease.

**Fetner, Lawrence Merrill** ✱ Lenoir, N. C.; North Carolina Medical College, Charlotte, 1914; veteran of World War I; died Sept. 5, aged 65.

**Finney, Roy Pelham** ✱ Spartanburg, S. C.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1920; author of "The Story of Motherhood"; died in the Mary Black Hospital Sept. 6, aged 59.

**Flowers, William Knox,** Dallas, Texas; Meharry Medical College, Nashville, Tenn., 1913; died Aug. 30, aged 71.

**Flynn, Raymond A.** ✱ New York City; Georgetown University School of Medicine, Washington, D. C., 1926; fellow of the American College of Surgeons; veteran of World War II; on the staffs of Fordham, Union, and St. Elizabeth's hospitals; died Aug. 24, aged 56, of coronary thrombosis.

**Fortin, Philip Frederick** ✱ New Bedford, Mass.; Temple University School of Medicine, Philadelphia, 1932; member of the American Academy of General Practice and in 1953 president of the Massachusetts Chapter; recently named "General Practitioner of the Year in Massachusetts"; died Sept. 9, aged 51, of cancer.

**Fuller, Muriel,** Chicago; University of Chicago, The School of Medicine, 1935; died Aug. 1, aged 66, of myocardial failure.

**Gaige, Elmer M.,** Waterloo, Iowa; Eclectic Medical Institute, Cincinnati, 1897; died Sept. 5, aged 84.

**Ganser, William J.** ✱ Madison, Wis.; Marquette University School of Medicine, Milwaukee, 1913; on the staff of the Madison General Hospital; died Sept. 3, aged 72.

**Gearhart, Alonzo Pitt** ✱ Oceanside, Calif.; University Medical College of Kansas City, Mo., 1898; member of the Kansas Medical Society; formerly practiced in Wichita, Kan., where he was associated with St. Francis Hospital; fellow of the American College of Surgeons; died Aug. 18, aged 84, of cardiorenal disease.

**Gernhard, William Ernest,** Cleveland; University of Wooster Medical Department, Cleveland, 1902; on the staff of the Lutheran Hospital, where he died Sept. 3, aged 78, of carcinoma of the prostate with metastases.

**Gibson, Lee K.** ✱ Johnson City, Tenn.; Vanderbilt University School of Medicine, Nashville, 1917; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; veteran of World War I; associated with the Veterans Administration Hospital and the Memorial Hospital, where he died Sept. 7, aged 63.

**Ginsburg, Samuel,** De Bary, Fla.; Long Island College Hospital, Brooklyn, 1920; an associate member of the American Medical Association; formerly practiced in Passaic, N. J., where he was associated with the Beth Israel and Passaic General hospitals; died in the Fish Memorial Hospital, DeLand, Sept. 12, aged 72, of massive pulmonary thrombosis and multiple small cerebral thrombosis.

**Goldberg, William Henry,** New York City; University and Bellevue Hospital Medical College, New York City, 1906; staff physician of the bureau of preventable diseases of the department of health; associated with Beth David and Sydenham hospitals; died Sept. 30, aged 73.

**Goodwin, Clinton Eddy** ✱ Weedsport, N. Y.; Syracuse University College of Medicine, 1903; veteran of World War I; for many years member of the board of education; health officer of the town of Brutus; associated with Auburn (N. Y.) Memorial Hospital; died Sept. 8, aged 79, of cerebral accident and heart disease.

**Goulet, Leo Joseph** ✱ Ludington, Mich.; University of Michigan Medical School, Ann Arbor, 1920; fellow of the American College of Surgeons; associated with Paulina Stearns Hospital; died in Reed City (Mich.) Hospital Sept. 9, aged 64, of coronary thrombosis.

**Green, Louis H.** ✱ Johnston City, Ill.; St. Louis College of Physicians and Surgeons, 1910; veteran of World War I; served on the school board; died Sept. 13, aged 67, of coronary thrombosis.

**Groth, William F.** ✱ Pickerel, Wis.; Jenner Medical College, Chicago, 1904; member of the Illinois State Medical Society; formerly practiced in Oak Park, Ill., where he was associated with the West Suburban Hospital; died in the Penn Hospital, Norway, Mich., Sept. 28, aged 76, of injuries received in an automobile accident.

**Gurvitch, Samuel Max,** New York City; McGill University Faculty of Medicine, Montreal, Quebec, Canada, 1932; member of the Medical Society of the State of New York; served on the staff of the Bronx Hospital; died in the Veterans Administration Hospital Sept. 29, aged 54, of nephrosis.

**Haley, Elliott Clarke** ✱ Front Royal, Va.; University of Virginia Department of Medicine, Charlottesville, 1948; died Sept. 13, aged 34.

**Harris, Aaron,** Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1935; veteran of World War II; died July 14, aged 46, of heart disease.

**Hatcher, Dock Thomas Jr.,** Lieut., U. S. Navy, Butler, Mo.; Baylor University College of Medicine, Houston, 1950; service member of the American Medical Association; died in Brunswick, Ga., July 6, aged 30, of accidental drowning.

**Heller, Abraham Gerald,** Flushing, N. Y.; Howard University College of Medicine, Washington, D. C., 1937; veteran of World War II; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; associated with Booth Memorial Hospital and the Long Island Jewish Hospital, where he died Sept. 18, aged 45, of coronary disease.

**Henrichsen, Karl Johan** ✱ East Moline, Ill.; Loyola University School of Medicine, Chicago, 1916; veteran of World War I; fellow of the American College of Physicians; formerly superintendent of the City of Chicago Municipal Sanitarium; died in the Moline (Ill.) Public Hospital Sept. 21, aged 78.

**Hodge, Otto Phillip,** St. Petersburg, Fla.; University of Louisville (Ky.) Medical Department, 1907; veteran of World War I; died in the Veterans Administration Hospital in Bay Pines Aug. 28, aged 71, of pulmonary infarcts.

**Holt, Janette Louise** ✱ New Lenox, Ill.; University of Illinois College of Medicine, Chicago, 1928; died in the Robinson Memorial Portage County Hospital in Ravenna, Ohio, Aug. 28, aged 66, of cerebral hemorrhage and hypertension.

**Holz, Rudolf,** New York City; Medizinische Fakultät der Universität, Vienna, Austria, 1925; member of the Medical Society of the State of New York; specialist certified by the American Board of Otolaryngology; on the staff of the Fordham Hospital; died Aug. 28, aged 59, of acute coronary thrombosis and hypertension.

**Hopkins, Edward Kimball,** Veterans Home, Calif.; Medical Department of the University of California, San Francisco, 1895; veteran of World War I; died Sept. 2, aged 81, of arteriosclerotic heart disease.

**Hopkins, Miles** ✱ Kelso, Wash.; Hahnemann Medical College and Hospital of Philadelphia, 1907; veteran of World War I; died Sept. 4, aged 82, of myocardial infarction.

**Hummer, Harry Reid,** Sioux Falls, S. D.; Georgetown University School of Medicine, Washington, D. C., 1899; an associate member of the American Medical Association; formerly connected with the Indian Service and served as superintendent of the Asylum for Insane Indians in Canton; at one time associated with the Veterans Administration; on the staffs of the Sioux Valley Hospital and the McKennan Hospital, where he died Aug. 28, aged 78.

**Husik, Jacob A.,** Brooklyn; University of Pennsylvania Department of Medicine, Philadelphia, 1904; died in the Jewish Chronic Disease Hospital Aug. 26, aged 80, of staphylococcus infection.

**Iden, John Hooe,** Manassas, Va.; University of Virginia Department of Medicine, Charlottesville, 1899; fellow of the American College of Surgeons; formerly an officer in the regular U. S. Navy; served on the staffs of the Doctors Hospital and the Eastern Dispensary and Casualty Hospital; died Aug. 11, aged 82, of a heart attack.

**Jennings, Francis Bates,** Randolph, Vt.; Columbia University College of Physicians and Surgeons, New York City, 1912; fellow of the American College of Surgeons; veteran of World War I; past-member of the board of trustees and on the honorary staff, Gifford Memorial Hospital, where he died Sept. 2, aged 71, of coronary occlusion.

**Johnson, Harry Z.** ✱ Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1930; member of the American Academy of General Practice; veteran of World War II; served on the staffs of Methodist, St. Joseph, and John Gaston hospitals; died Sept. 20, aged 51.

**Jones, Wellington West** ✱ Housatonic, Mass.; University of Louisville (Ky.) Medical Department, 1901; died in Pittsfield (Mass.) General Hospital Sept. 13, aged 80.

**Keator, Louise Helmka,** Polo, Ill.; Northwestern University Woman's Medical School, Chicago, 1901; at one time a medical missionary in China; for many years associated with the Dixon (Ill.) State Hospital; died in the Dixon (Ill.) Public Hospital Sept. 7, aged 84, of toxemia, following burns received when her blouse caught fire as she was burning papers in a stove.

**Keely, Henry Edgar,** Col., U. S. Army, retired, Pottstown, Pa.; Jefferson Medical College of Philadelphia, 1908; fellow of the American College of Surgeons; veteran of World War I and II; entered the regular army in 1920 and retired May 31, 1946; died in the Valley Forge Army Hospital, Phoenixville, Aug. 15, aged 74, of carcinoma of the lung with metastasis.

**Kelsall, Oliver Holt,** Louisville, Ky.; University of Louisville (Ky.) Medical Department, 1899; an associate member of the American Medical Association; member of the Southeastern Surgical Association; formerly on the faculty of his alma mater; served on the staffs of Kentucky Baptist Hospital and SS Mary and Elizabeth Hospital; died Sept. 4, aged 79.

**Kendig, Jerome Stauffer,** Salunga, Pa.; Jefferson Medical College of Philadelphia, 1889; on the staff of St. Joseph Hospital in Lancaster; an associate member of the American Medical Association; for many years school director in the East Hempfield Township; served as director of the Union National Bank in Mount Joy; died Sept. 16, aged 93, of heart failure.

**King, Marion Norwood** ✱ Norfolk, Va.; University of Maryland School of Medicine, Baltimore, 1898; served in France during World War I; died in the Norfolk General Hospital Sept. 8, aged 82, of hemorrhage due to arteriosclerosis.

**Knudson, Frank Benjamin** ✱ Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; associated with the Lutheran Deaconess Hospital, where he died Sept. 7, aged 83, of cor pulmonale, chronic emphysema and bronchiectasis.

**Kocialek, Michael John** ✱ Youngstown, Ohio; Georgetown University School of Medicine, Washington, D. C., 1920; on the staff of St. Elizabeth Hospital; associated with the North Side Unit and the South Side Unit of the Youngstown Hospital; veteran of World War I; died Sept. 10, aged 60.

**Krape, Joseph Harmen,** Kent, Ohio; Jefferson Medical College of Philadelphia, 1894; died Sept. 3, aged 89, of carcinoma of the urinary bladder.

**Kruk, George Joseph,** Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; died Sept. 25, aged 83, of cardiac decompensation, mitral regurgitation and arteriosclerosis.

**Lane, Abraham,** New York City; University and Bellevue Hospital Medical College in New York City, 1913; veteran of World War I; died Aug. 1, aged 70, of carcinoma of the colon, and arteriosclerosis.

**Leach, Charles Daniel** ● Newark, Ohio; College of Physicians and Surgeons, Boston, 1910; for many years on the staff of the Newark Hospital; from 1913 to 1928 on the staff of the Huchow Union Hospital in Huchow, China; died in Granville Aug. 31, aged 74, of pulmonary embolism and a cerebral accident.

**Leonard, Clyde Archie** ● Jackson, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1904; past-president of the Jackson County Medical Society; on the staffs of the Foote and Mercy hospitals; died at Manistee Sept. 4, aged 75.

**Long, Margaret** ● Denver; Johns Hopkins University School of Medicine, Baltimore, 1903; in 1943 the state historical society awarded her its first citation for distinguished historical service to the state; wrote several books; died in St. Luke's Hospital, Aug. 29, aged 83.

**Lord, George Hammond** ● Aurora, Colo.; University of Nebraska College of Medicine, Omaha, 1935; veteran of World War II; served on the staff of the Presbyterian Hospital in Denver; died in Denver Sept. 10, aged 46, of carcinoma of the kidney.

**Loumos, Sarantos Constantine,** Chicago; National University of Athens School of Medicine, Greece, 1914; served as a medical officer in the Greek Army and received several decorations for valor in the Balkan War; served on the staffs of the City of Chicago Municipal Tuberculosis Sanitarium and Elgin (Ill.) and Chicago State hospitals; died Sept. 8, aged 67, of chronic myocarditis.

**Lussky, Herbert Otto** ● Evanston, Ill.; Rush Medical College, Chicago, 1916; member of the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; formerly on the staff of the Children's Memorial Hospital in Chicago; served on the staffs of St. Francis Hospital and the Evanston Hospital, where he died Sept. 26, aged 70, of monocytic leukemia.

**McConkie, Willis Leslie** ● Carroll, Iowa; State University of Iowa College of Medicine, Iowa City, 1919; specialist certified by the American Board of Otolaryngology; fellow of the American Academy of Ophthalmology and Otolaryngology; served as president of the Carroll County Medical Society; on the staff of St. Anthony Hospital, where he died Aug. 14, aged 62, of cancer.

**McDaniel, M. T.,** Duluth, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1907; died in Atlanta Aug. 31, aged 80.

**McGirr, Felix Francis** ● Cambridge, Mass.; Harvard Medical School, Boston, 1899; died Aug. 10, aged 85, of arteriosclerosis and cerebral thrombosis.

**Magruder, Levin Wales,** New Orleans; University of the South Medical Department, Sewanee, Tenn., 1899; specialist certified by the American Board of Radiology; served as chief of radiology at Illinois Central Hospital and Southern Baptist Hospital; died in Long Beach, Miss., Aug. 20, aged 83.

**Marden, Wilmot Leighton** ● Lincolnville, Maine; Boston University School of Medicine, 1898; member of the Massachusetts Medical Society; specialist certified by the American Board of Physical Medicine and Rehabilitation; formerly practiced in Lynn, Mass., where he was on the staff of the Union Hospital; died in the Camden (Maine) Community Hospital Aug. 1, aged 81, of carcinoma of the prostate.

**Morrison, Charles R.,** Elbridge, Tenn.; Chicago College of Medicine and Surgery, 1916; died in the Obion County Hospital, Union City, Aug. 15, aged 83, of uremia.

**Nash, Edward Myron,** New York City; University and Bellevue Hospital Medical College, New York City, 1920; member of the Medical Society of the State of New York and the American Psychiatric Association; died in the Mount Sinai Hospital Sept. 17, aged 66, of chronic renal insufficiency.

**Powell, Eli,** Cross Plains, Texas; Memphis (Tenn.) Hospital Medical College, 1907; on the staff of the Graham Sanitarium in Cisco, where he died Aug. 12, aged 82, of carcinomatosis.

**Reisman, Samuel Charles,** New York City; Long Island College Hospital, Brooklyn, 1901; an associate member of the American Medical Association; died Sept. 11, aged 79, of cancer.

**Samuelson, Samuel** ● Robbinsdale, Minn.; University of Minnesota Medical School, Minneapolis, 1931; died near Tofte Aug. 25, aged 56, in the crash of a private plane of which he was the pilot.

**Wellard, Henry Carruthers** ● New Baltimore, Mich.; Wayne University College of Medicine, Detroit, 1936; member of the American Academy of General Practice; past-president of the Macomb County Medical Society; veteran of World War II; secretary of the medical staff, St. Joseph Hospital, Mount Clemens; died Aug. 28, aged 55.

**Wheat, Robert F.** ● Bainbridge, Ga.; Memphis (Tenn.) Hospital Medical College, 1905; served as a member of the state board of medical examiners, as chairman of the local board of school trustees, and the Decatur County Board of Health; a trustee of the Shorter College, Rome; died Sept. 5, aged 77.

# FOREIGN LETTERS

## AUSTRIA

**Modification of Metabolism by Insulin and Sulfonamides.**—At the meeting of the Society of Physicians in Vienna on Oct. 4, Dr. E. Beringer stated that sulfonamide-induced hypoglycemia is believed by some to be due to an augmented secretion of insulin. In some experimental animals this becomes evident in a degranulation of the beta cells. Beringer and Burkl, however, were unable to detect this change in dogs. The following findings established a difference between the mode of action of insulin and the blood-sugar reducing sulfonamides: In starving rats insulin causes disappearance of glycogen from the liver and the muscles. In guinea pigs it causes a decrease in muscle glycogen without a decrease in liver glycogen. In rabbits the muscle glycogen decreases, whereas the liver stores additional glycogen. In man the liver stores additional glycogen while the peripheral sugar deposits remain unchanged. The sulfonamides, on the other hand, cause uniform storage in man and other animals. During starvation they increase the sugar supply in the liver without exerting any influence on the sugar content of the muscles. During the administration of carbohydrate the sugar reserve in the muscles is higher in the diabetic patients treated with insulin than in those treated with sulfonamides. This shows that the metabolic improvement effected by the sulfonamides is not the result of an insulin effect.

**Encephalography.**—At the same meeting Dr. K. Holub stated that the 24-hour encephalography can be used to examine the subdural space. A knowledge of this procedure aids in avoiding certain diagnostic errors. The demonstration of subdural air accumulations is most significant when encephalography is done with a technique that excludes the occurrence of artificial subdural fillings. The speaker reported three surgical cases in which a correct diagnosis could be made only with the aid of the 24-hour encephalography. Subdural effusions could be evacuated in all three patients, and this was followed by the disappearance of the neurological functional impairment.

**Physiology and Pathology of Diurnal Pattern.**—At the same meeting, Dr. E. Menninger-Lerchenthal stated that plants assume the posture of sleep at sunset. The chloroplasts in the cells of the epidermis are elongated at noon, but at midnight they are spherical. Diurnal periodicity is observed also in animals. For instance, the frequency of mitoses in the cells of the intestinal glands in rats show maximums at 4 a. m. and at noon and minimums at 8 a. m. and at 4 p. m. At 4 p. m. the temperature of the human body reaches the highest level, and postencephalitic visual spasms are most frequent. Daily 24-hour variations have been observed in many physiological factors; most reach a maximum between 3 and 8 p. m. Diuresis reaches its maximum at 1 p. m. and its minimum at midnight. This diurnal periodicity must be produced by the action of sunlight on the regulatory system of the water exchange, that is, by the hypothalamoneurohypophysial system. The fasciculus opticohypothalamicus transmits the stimulus of sunlight to this system and to other nuclei in the floor of the third ventricle. This nerve bundle contains nonmedullated and poorly medullated nerve fibers, which, as the energetic part of the optic tract, emerge from the optic nerve. These fibers in turn originate in the layer of sympathetic ganglion cells in the retina. Therefore, the heliotropic action system consists of the layer of sympathetic ganglion cells near the vitreous body, the sympathetic fibers in the optic nerve, and the fasciculus opticohypothalamicus, with stimulus transmission to the supraopticoneurohypophysial and tuberoadenohypophysial system. The heliotropic effect has been demonstrated in animal experiments.

That sunlight has an effect on the function of body organs could be proved also on persons who had become blind early in life. Because the effect of light has been abolished, a nycturia is induced by the simple, as well as the vasopressin-combined, Volhard's water test. This is different from the results obtained in patients who have become blind late in life or who have normal sight. Furthermore, an insulin-tolerance test produces a precipitate and prolonged counter regulation. Moreover, the sella turcica is small in those who have become blind early, because of the absence of the stimuli induced by light results in hypoplasia of the hypophysis and of its bony support. The stimulus of sunlight acts day by day on the heliotropic action system or on the energetic portion of the optic tract. A function pattern develops ("engraved" functions) and, since the influence of sunlight occurs at regular intervals, the pattern is periodic and diurnal. A knowledge of this pattern gives a deeper meaning to many state-

The items in these letters are contributed by regular correspondents in the various foreign countries.

ments on the part of the patient and to clinical observations. The diurnal pattern or rhythm involves functions of the sympathetic, endocrine, and metabolic systems. Relatively easily observable and especially suited for our concepts is the sympathetic nervous system with its two functional parts, the sympathetic and the parasympathetic system. Differentiation of sympatheticotonia and parasympatheticotonia on the whole is still justified. The theory of the diurnal periodicity of body functions makes use of these concepts. We distinguish between daytime under the influence of the sympathetic and nighttime with chiefly parasympathetic control. There are disorders that occur only at night, and others that are more severe at night. Many of these can be explained by the predominance of parasympathetic control. Night pains are often due to alkalosis which is the metabolic correlate to parasympatheticotonia. During the hours of neurosympathetic shift, pains or neurosympathetic disturbances of various types often occur. The pathological electrocardiogram that occurs in the morning recalls the matutinal apoplexies and cardiac infarcts. The diurnal pattern in its entirety appears during illness or cures "over night," and is exemplified in the hippocratic rule of the turning point in pneumonia on the fifth, seventh, or ninth day. Here there is a doubling-up of the diurnal pattern, which in psychopathology is known as the diencephalic symptom.

## CANADA

**Adenoviral Conjunctivitis.**—During 1955-1956, numerous cases of viral conjunctivitis were seen in Toronto in children and adults. From the Hospital for Sick Children comes a report of laboratory findings in 56 of these cases (*Canad. M. A. J.* 77:675, 1957). Eye washings and throat swabs were collected from patients suspected of having adenovirus infection, and 33 adenovirus strains were isolated from the eye washings. In one epidemic traced to use of a swimming pool, adenovirus type 7 was implicated, while adenoviruses of types 2, 3, 7, and 9 were isolated from sporadic cases. Serologic tests were carried out on paired serums from 15 of the 33 patients from whom adenovirus was isolated. A significant rise in neutralizing and complement-fixing antibody levels was demonstrated in 12 of these patients. In addition, one patient showed a rise in neutralizing antibody titer, one in complement-fixing antibody titer, and one no rise in either.

**Rheumatoid Arthritis.**—A group of Montreal psychiatrists (*Canad. M. A. J.* 77:533, 1957) maintain that rheumatoid arthritis represents a maladaptation to psychobiological stress. They studied from this point of view 18 patients, using their siblings as controls. The studies showed that the patients were overactive as children but inhibited later in life, whereas their siblings started with normal or inhibited motor activity and could use their motor apparatus successfully for instinctual discharge later in life. It is suggested that early motor overactivity served as an outlet for aggressive drives, and was abandoned at puberty. Deprived of discharge of instinctual tension in movement and impulsive action, the patients took refuge in aggressive fantasies that gave rise to feelings of guilt and anxiety. Intensification of these fantasies by disturbing events in the patients' life often preceded onset of rheumatoid arthritis. The severity of the illness seemed proportionate to the severity of impairment of capacity to express aggression. The therapeutic inferences are as follows: 1. In the acute stage the psychiatrist should be called in only if the illness has been precipitated by an emotional disturbance. 2. Rehabilitation may fail because motor handicaps are functional rather than structural. 3. Intense psychotherapy seems indicated for patients with severe emotional disturbances. 4. Awareness and understanding of emotional problems by members of the therapeutic team seems to enhance the prospects of successful therapy.

**Promazine and Chlorpromazine in Mental Syndromes.**—Two Montreal psychiatrists made a comparison of the effects of promazine and chlorpromazine in a series of 259 patients, mostly unselected patients in an open psychiatric setting, with acute or recently apparent mental syndromes. One small group consisted of males with chronic schizophrenia in a closed setting. The psychiatrists found that the two drugs had a similar effect on overt behavior and symptoms in mental disorder, but that for a similar effect the amount of promazine had to be 30 to 100 mg. higher per dose in acute or recent cases, and 100 to 400 mg. higher per dose in chronic cases. With oral administration, the response to promazine was about 36 hours slower in appearing than response to chlorpromazine, but response was equally rapid with both drugs administered intramuscularly or intravenously. Promazine produced less drowsiness and "knocked-out" feeling than chlorpromazine, and the newer drug was less likely to cause liver dysfunction (4%) than was chlorpromazine (25% of cases). A change can be made to promazine if chlorpromazine causes serious complications. It was suggested that promazine should be particularly useful in the treatment of outpatients.

**National Voluntary Health Associations.**—A recent brochure published by the Health League of Canada (111 Avenue Rd., Toronto, Ontario) gives a summary of the objectives, organization, and financing of the 15 national voluntary health associations in Canada, exclusive of professional associations.

These associations include voluntary agencies for tuberculosis, arthritis and rheumatism, blindness, cancer, crippled children and adults, diabetes, cardiac disease, mental health, muscular dystrophy, paraplegia, poliomyelitis, epilepsy, multiple sclerosis, and deafness. The Health League itself has divisions for venereal disease, immunization, water fluoridation, gerontology, alcoholism, child and maternal health, and industrial health. The relative funds available seem to bear little relation to the case load in the different diseases, thus the average amount spent on mental health research is probably less than $1.00 per afflicted person. In contrast, the muscular dystrophy organization raised something like $21 per estimated case of dystrophy and the poliomyelitis organization even more. This is not to suggest that the latter two organizations are overfinanced but to emphasize the pathetically small budget of the mental health association. This underfinancing would seem to apply also to the epilepsy organization, which raised some $15,000, whereas there are thought to be 75,000 epileptics in Canada. Some organizations obtain their support mainly from the sufferers from the disorder concerned; thus, the diabetes association gets funds from diabetics and the multiple sclerosis society obtains a registration fee from multiple sclerosis patients. Some societies concentrate on research; for example, the muscular dystrophy organization is backing research projects in eight centers. Others, such as the arthritis and rheumatism organization, give treatment while carrying out an educational program. The organization for paraplegia concentrates on obtaining treatment for paraplegics not covered by the veteran services.

## CHILE

**Treatment of Influenza with Cortisone and Antibiotics.**—Dr. R. Cruz-Coke and co-workers reported to the Medical Society of Santiago on the pandemics of influenza which recently swept over Chile causing many deaths. The case fatality rate was not high, but because of the large number of persons involved the toll was great. Pulmonary complications were the main causes of death. They developed in persons whose general condition was poor and who did not respond to antibiotics. During July and August the authors treated 365 hospitalized patients with influenza complicated by pneumonopathies. The death rate in this selected group of patients was 21.6% and 50% in those with bronchopneumonia. As soon as these patients were admitted to the hospital, they were given 800,000 units of penicillin, 1 Gm. of streptomycin, and 2 Gm. of tetracycline daily. All the patients with severe pulmonary complications died, notwithstanding the fact that in many cases the complications occurred when the patient was already hospitalized. Because of this high case fatality rate, it was decided to add 100 mg. of cortisone or 20 mg. of prednisone to the routine treatment. The dosage was gradually reduced after 5 to 10 days of combined treatment.

The results of the combined treatment were excellent. The general condition of the patient rapidly improved, the fever abated, the pulse became slower, and the dyspnea rapidly disappeared. Viral hepatitis, which was a complication in two of the authors' seven patients, followed a favorable course with cure in two or three weeks. Two patients with cardiac insufficiency and bronchopulmonary complications of influenza were given cardiotonics and were restricted as to use of salt in the diet, in addition to the combined treatment. The cortisone or prednisone had no influence on the retention of liquids by the tissues. In one patient who had diabetes, cardiac insufficiency, and severe complications of influenza, the combined treatment did not affect the metabolism of carbohydrates. The combined treatment was of great benefit to a patient with active bilateral pulmonary tuberculosis when he became ill with influenza. This patient received antibiotics, cortisone, and isoniazid.

## INDIA

**Health and the Second Five-year Plan.**—Inaugurating a three-day seminar on health and the second five-year plan in Bombay, Mrs. Hansa Mehta, of Baroda University, urged women to study medicine and nursing in increasing numbers. About 560 million dollars has been earmarked for the health program of the second five-year plan as compared to about 280 million dollars spent on this program during the first five-year plan. Mrs. Mehta estimated the plan's requirements at 90,000 physicians, 80,000 nurses, and 80,000 midwives. At present there are about 70,000 physicians, 22,000 nurses, and 26,000 midwives. She also stressed the importance of disease prevention and said the first task of social workers in this field was to make the people health conscious. People have to insist on higher standards of cleanliness.

**Influenza Epidemic.**—The *Indian Journal of Medical Sciences* (11:8 [Aug.] 1957) contains a report on the clinical, radiologic, electrocardiographic, laboratory, and virus studies carried out by the influenza research committee on patients with influenza admitted to the research unit in Bombay in May and June. A total of 158 cases (121 adults and 37 children) were analyzed. Of the contacts 61.8% succumbed to the disease, but only 17.1% were admitted to the hospital. Most of the patients had only

a mild attack. Of the adults, 90% were below the age of 40 years. Of the children, only one was as young as 2 months, the majority being between 6 months and 5 years. The ratio of males to females was 2:1. In adults fever associated with dizziness, generalized aching, and cough were the most common symptoms. Nearly 50% complained of prostration, and less than 25% had symptoms suggestive of involvement of the gastrointestinal or respiratory systems. All the children had fever. In severe cases dyspnea, stupor, or convulsions were noted. Clinical examination showed upper respiratory disease in 50% of the adults. Involvement of the lung was seen in a much smaller number, while toxemia was present on the admission of 25%. About 50% of the children were in good general condition on admission; 16% were toxic and dehydrated; 50% showed respiratory signs. Throat congestion was present in all. Clear-cut signs of consolidation or collapse of the lung were found in only one patient. Bradycardia was present in 18.8%. Signs of affection of the cardiovascular system were present in 10%. Nearly 33% showed hypotension. Postural hypotension was present in 20% and may have been responsible for dizziness. The duration of fever in adults was less than five days in 68%. The average total duration of fever in children was 8.8 days. The fever was moderately high in most adults and above 103 F (39.5 C) in 19% of the children.

The leukocyte count was normal or low in all patients. Leukocytosis was seen only with the onset of secondary infection. The sedimentation rate was elevated in 128 patients. Blood cultures were negative. Examination of throat swabs and cough plates showed that there was no alteration of the normal flora of the throat and upper respiratory tract. Lung puncture performed on five patients with signs of consolidation showed a growth of pneumococci on culture in two cases. Blood chemistry studies showed no deviation from normal. Roentgenograms were taken of 121 patients. Abnormal findings were present in 25 adults and 13 children and consisted of consolidation with collapse, collapse alone, or patchy consolidation. Collapse when seen alone, as in six patients, was always in the right lower lobe. Electrocardiographic studies revealed the presence of myocarditis in 16 patients with abnormal T waves. These changes did not appear to be related to the severity of the fever or toxemia. Two-thirds of the patients recovered fully with symptomatic treatment and rest. Antibiotics were required only in a few cases. They were useful when secondary infection as shown by leukocytosis had set in. There were nine deaths in the series—four due to hyperpyrexia, four due to pulmonary complications, and one due to encephalitis. Antibiotics in adequate doses and given early did not prevent the fatal outcome in these cases.

**Accidental Electrocution.**—K. C. Jacob (*Antiseptic* 54:9 [Sept.] 1957) stated that accidental electrocution is not uncommon. The author observed 24 such cases (21 men and 3 women) at autopsy during the period 1950 to 1955. The electrocution of criminals is not practiced in India. The current causing death was high-tension in 9 cases and low-tension in 15. In 15 cases the accident occurred in a home or a hotel. These accidents occurred in the hot months when sweating and moist hands may have favored conduction. In 15 cases the accident occurred while the victims were at work. Twenty victims died instantly, in one case death was delayed for a few hours, and in three cases no history was available. Autopsy showed a generalized visceral congestion and the presence of fluid or clotted blood in all the chambers of the heart in all cases. Tardieu's spots were seen in 16 victims, and food in the stomach was found in 17. Superficial electrical burns were found on 12 victims, deep burns on 13, and charring in 2. The distribution of these burns showed that the left hand or the left side of the body was involved in 16 of the 24 victims. Artificial respiration instituted promptly and continuously after electric shock may lead to recovery, but recovery is unlikely if respiration is delayed for 20 minutes. In this series most of the victims appear to have been given up as dead before any treatment was given. Perhaps some of them could have been saved, if the lay persons present had had more understanding of artificial respiration.

**Serum Iron Changes in Anemia.**—J. B. Chatterjea and co-workers (*Indian J. M. Sc.* 11:8 [Aug.] 1957) stated that the serum iron level is normal or high in uncomplicated nutritional macrocytic anemia. It was accidentally observed by the authors that an initial hypoferremia occurred in such patients two or three days after the institution of specific therapy. They therefore observed the various changes in blood after starting specific treatment in 12 patients with nutritional macrocytic anemia with megaloblastic bone marrow. The ages of these patients varied from 20 to 42 years. The initial hemoglobin level varied from 2.9 to 11.3 Gm. per 100 cc., while the red blood cell count varied from 560,000 to 3,180,000 per cubic millimeter. The serum iron level, reticulocyte count, hemoglobin level, red blood cell count, and hematocrit values were determined frequently at the start of specific therapy. Two patients proved refractory to treatment. The other 10 showed satisfactory response. All of these showed an initial drop in the serum iron level, which gradually rose to normal. These were patients with uncomplicated nutritional macrocytic anemia. The two who did not respond to treatment had an associated iron deficiency. Their serum iron level remained low, and they required additional iron therapy. The sharp fall

in the serum iron level seen in uncomplicated cases may be the earliest index of satisfactory erythropoietic response as an indicator of erythropoietic improvement. The fall is presumably due to rapid utilization of circulating iron for erythropoiesis.

**Tolbutamide.**—T. S. Row and co-workers *(Current M. Pract.* 1:8 [Aug.] 1957) stated that tolbutamide resembles carbutamide in chemical structure, differing from it in having a methyl group substituted for the amino group on the benzene ring. It has thus a similar action to that of carbutamide, but because of the structural alteration it has no bactericidal action. The authors tried this compound in 11 patients between the ages of 35 and 60 years. A preliminary glucose tolerance test was done, and before drug treatment all patients were kept on a standard 2,500-calorie diet for three or four days. Blood sugar level 90 minutes after breakfast and total loss of sugar in the urine in 24 hours were estimated once before the trial was started. In the first 10 days the postprandial blood sugar level and daily loss of sugar in the urine were estimated daily. Afterwards, they were estimated fortnightly. The glucose tolerance test was repeated three weeks after drug treatment. The response was excellent in two patients, good in six, and poor in three. No complications were encountered. Thus, this drug has a place in the treatment of selected patients with diabetes, but it has not replaced insulin which is still indispensable for the treatment of brittle diabetics and for conditions of diabetic acidosis and coma. Three patients who responded well to carbutamide did not respond to tolbutamide. The patients should be hospitalized when under treatment with this drug, so that repeated estimations of the amount of sugar in the urine and blood sugar level can be made. Although complications are rare, they also require close medical supervision while treatment is being given.

## PERU

**Homage to a Medical Student.**—This year marks the centennial of the birth of the medical student, Daniel Alcides Carrión, who in 1885 gave his life in the cause of science. At that time the so-called Oroya fever, the acute phase of bartonellosis, and the disfiguring but relatively harmless verruga peruana, its chronic phase, were believed to be unrelated. An epidemic occurring in 1870 drew attention to the fact that both processes tended to arise in the same place at the same time, and two years later a physician named Espinal advanced the hypothesis that they were different forms of the same disease. In 1885 Carrión, after four years of piling up data, became convinced that they indeed were two distinct phases of one disease, and on Aug. 27, despite warnings from his companions and teachers, he injected himself with material from lesions of verruga peruana. Twenty-one days later he began to show the symptoms of Oroya fever; 19 days after the onset he was dead, but he had proved once and for all that the two diseases have the same cause. In August the government paid official homage to his memory.

**American Congress of Medical Students.**—The first American Congress of Medical Students took place in Lima in August. Delegates from 14 medical schools of South and Central America attended. Mr. Hugo Dibarbouru of Uruguay stressed the fact that universities should have complete autonomy if they are to avoid the disastrous influence of changing governmental policies. The generally poor basic preparation exhibited by the students who came to the medical schools was deplored. More attention to the teaching of preventive medicine was demanded in order that the students might be enabled to combat the medical and sanitary problems of their countries. A closer relationship between student and professor was urged.

**Congress of Tuberculosis.**—The third Congress of Tuberculosis was held in Arequipa in August. All of the speakers agreed that southern Peru is experiencing an increasing tuberculization as is shown by the high infectiousness, morbidity, and mortality. The death rate from tuberculosis, after a steady decrease from 1947 to 1953, has showed in the last three years a mild but progressive rise. The Indian population, continuously migrating to Arequipa from the highlands in search of better living conditions, have an especially high incidence of the disease. Their treatment is complicated by the fact that they usually live in slums and must be treated there because of the shortage of hospital beds. The congress recommended (1) a campaign of mass vaccination with BCG for all infants, (2) studies to determine the factors causing the present high incidence of tuberculosis, and (3) an immediate increase in the number of beds available for tuberculous patients.

**Epidermoid Carcinoma in Situ of the Skin.**—In 1912 Bowen described two cases of atypical epithelial proliferation and regarded this alteration as a precancerous dermatosis. Since then many reports of this condition have indicated that all superficial epithelial tissues of the body may undergo this type of degenerative change. In 1942 McGavic reported five cases of this disease affecting the conjunctiva and the cornea. Most authors now agree that the condition is an epidermoid carcinoma in situ.

Four additional cases of epidermoid carcinoma of the eye were reported by Dr. A. Natteri in *Anales de la Facultad de medicina* (vol. 40, no. 1, 1957). Unlike most such patients, two of those in this series were relatively young (28 years old). The lesion in-

volved only the conjunctiva in two and both the conjunctiva and the cornea in the other two. On gross examination this lesion may easily be mistaken for one of such benign pathological conditions as pterygium, xerosis, pinguecula, or pannus or for an epibulbar tumor (papilloma, lymphoma, leukoplakia, or squamous cell carcinoma). Histological examination is necessary for an accurate diagnosis. All of the author's patients underwent total enucleation of the eye involved after a tentative diagnosis of epithelioma. Microscopic examination revealed atypical changes in the inferior layers of the epithelium only. For this reason the author believes that either atypical dyskeratosis or precancerous metaplasia would be a more suitable name for the lesions found in this series.

**Renal Complications of Diabetes.**—Renal complications are frequent in patients with diabetes mellitus, their incidence increasing with the duration of the disease. Most of them are associated with a bad prognosis, according to Dr. Carlos Lafranco la Hoz in the same issue of *Anales de la Facultad de medicina*. The author reports a series of 41 patients with diabetes, 25 of whom had renal complications. Lower nephron nephrosis occurs in patients whose diabetes is inadequately treated or not treated at all and specially in those undergoing surgical operations without preoperative control of the diabetes. It is rare, but when present it is invariably fatal. It was observed in one patient of this series, who died within 72 hours after being operated on for a cataract. Osmotic or vacuolated nephrosis of the proximal tubules, the glycogenic vacuolization of the Henle tubules (glycogenic nephrosis), and fatty or lipemic nephrosis are more common than is currently believed, but these designations are based on structural changes that usually give rise to no symptoms or only a slight albuminuria. In the author's series an autopsy was performed on 3 of the 10 patients who died while in the hospital. Evidence of at least one of the chronic nephroses mentioned was present in all.

Renal papillary necrosis is another commonly fatal complication of diabetes. It generally runs a fulminating course, and it does not appear that the severity or degree of control of diabetes is in any way related to the incidence or severity of this complication. In most cases pyelonephritis is found to be its forerunner. This complication is not limited to diabetic patients. In this series no case of acute necrosis of the renal papillae was observed, but clinical data consistent with the diagnosis of previous chronic pyelonephritis were obtained in nine of them. Benign nephrosclerosis or essential hypertension is present in almost 75% of the diabetic patients over 50. Diabetes seem to favor the production of atherosclerosis and essential hypertension. Appropriate dietary management in obese, hypertensive diabetics often results in reduction or abolishment of the patient's insulin requirement and normalization of the body weight and blood pressure. Benign nephrosclerosis was found in eight patients of the present series, all of whom were 60 to 70 years old.

Chronic glomerulonephritis is not rare in diabetic patients. It seems that the high incidence of infection in diabetics makes them more susceptible to glomerulonephritis. Frequently this complication is contracted before the diabetes is clinically recognized (in the so-called prediabetic state). Seven patients in this series suffered from this complication, and six of these showed renal insufficiency. Glomerulosclerosis is pathognomonic of diabetes. It first involves the capillaries rather than the intercapillary tissues in the glomeruli. Clinically it is associated with hypertension, retinitis, edema, and progressive uremia. Its prognosis is always poor. From the time the diagnosis is made, the survival period is never longer than five years. Three patients of this series were presumed to have had this complication. The author concluded that early diagnosis and control of diabetes are the best preventive measures for the renal complications of the diabetes.

**Chronic Glomerulonephritis.**—In the same issue Toledo and Castillo review a series of 739 patients with chronic glomerulonephritis. Of these 54 had renal insufficiency. The duration of the disease was estimated to range between four months and 25 years. A total of 308 patients had had symptoms for only two years prior to admission and 83 for only one year. Arterial hypertension was found in all the patients, headache in 65.8% paresthesias in 38.2%, edema in 37.2%, cardiac insufficiency in 36.3%, retinopathy in 24.8%, hematuria in 21.9%, low back pain in 14.7%, and eclampsia in 4.9%. It was postulated that in these patients the acute phase of the glomerulonephritis occurred in childhood but because of negligible clinical manifestations went unrecognized. All of the patients without renal insufficiency were found to have the subchronic variety of the disease, which in most instances runs a prolonged course with edema, proteinuria, and mild hypertension. When proteinuria is copious, however, large amounts of globulin are lost, and intratubular coagulation occurs. In patients with renal insufficiency, mild edema and cardiovascular complications were the most conspicuous findings, cardiac failure accounting for the death of all but one patient, who died of uremia.

Early recognition and treatment are important. The causative factors should be removed. Measures must be taken to improve the renal circulation, reduce the burden on the kidneys, and strengthen the heart. History of tonsillitis was found in 78% of the patients. The authors believe that tonsillectomy should not be performed on patients with glomeru-

lonephritis, since it may reactivate the disease. Absolute rest, heat, and antispasmodic medication have been systematically used for increasing the renal arterial flow. Much attention has been given to the use of acetazolamide as a diuretic. Particularly noteworthy are the results obtained with penicillin. Other antibiotics were without effect. The apparent diuretic action exhibited by penicillin is believed to be due to its arresting effect on the diffuse inflammatory congestion of the renal tissue.

## SWEDEN

**Shortage of Physicians.**—In 1950, a spokesman of the Swedish Medical Association issued a reassuring statement with regard to the alleged shortage of physicians in Sweden, prophesying that under normal conditions it would be overcome in five years. This optimistic forecast has proved false. *Svenska läkartidningen* for Sept. 20 quotes several comments that reflect public opinion. Matters have come to such a pass that the Minister for the Interior has found it necessary to summon representatives of the Swedish Medical Association and the Ministry of Health in conference. The mental hospitals are seriously understaffed, and other hospitals have had to close some of their departments for the same reason. Perhaps the worst hit of all are the district health officers who combine general medical practice with public health work. In the two most northerly provinces about 25 of 75 such appointments remain vacant for want of applicants. The recent crisis in Hungary has yielded about 40 Hungarian physicians among the thousands of refugees admitted to Sweden, but this number is inadequate and it may have to be added to generously, perhaps by Austria, if the crisis is to be successfully met.

**Delirium Tremens.**—Since 1950, tests have been carried out at the Beckomberga hospital in Bromma with various corticosteroids in the treatment of delirium tremens. In *Svenska läkartidningen* for Oct. 4, Dr. Izikowitz and co-workers bring their researches in this field up to date with an account of their experiences with a total extract of suprarenal cortex (Eschatin). The dosage varied greatly with the 21 patients who had a history of more than 20 years of alcoholism and who were on the threshold of delirium tremens. Serving as controls were 13 alcoholics who presented similar clinical findings and who were not given prophylactic treatment with this extract. The outcome of this comparison was remarkably favorable to the treatment given. The contraindications for it were the same as those for cortisone, and when the extract had been given for five to nine days, it was followed by injections of corticotropin with a view to aborting an attack of suprarenal cortical insufficiency.

**Deaths from Arteriosclerosis.**—Since 1952, the international system for the registration of the causes of death, sponsored by WHO, has rendered possible, in theory at least, a reliable standard by which to compare the various causes of death in different countries. Such a comparison brings out the curious facts that in Sweden in 1954 arteriosclerosis was responsible for 31.9% of all the deaths among men over 40. The corresponding figure for the United States was 40.2%, whereas it was only 6.9% for Japan and 6.4% for France. Before these figures are taken to prove that Sweden's addiction to arteriosclerosis and Japan's immunity from it are due to the former's high and the latter's low consumption of fats, we must be sure of the accuracy of our death certificates. They should be so in this country where, under the national health insurance scheme, hospital treatment is free, and nearly all who die in hospital undergo a postmortem examination, but even so some of the deaths coming under one or another of the diagnoses referable to some form of arteriosclerosis may have been misinterpreted. To study this possibility, Malmros and Borgström of Lund University have obtained copies of all the death certificates referable to arteriosclerosis during a certain period from the Central Bureau of Statistics. Questions will be sent to the authors of these certificates who will be asked to provide additional data about them. It is hoped that in this way the statistics in respect to arteriosclerosis as a cause of death will be rendered more reliable than before.

**Psychic Reactions to Procaine Penicillin.**—In 1951, Batchelor and co-workers reported in the *Lancet* an account of eight patients who had reacted to injections of procaine penicillin by psychic symptoms interpreted as the outcome of an accidental intravenous introduction of an aqueous suspension of this drug. Björnberg and Selstam have observed 12 such patients. Their first nine cases were reported in *Acta dermatato-venereologica* in 1957, and three more were reported in *Svenska läkartidningen* for Sept. 13, 1957. The clinical findings presented by the British and Swedish authors are remarkably uniform, the patient reacting immediately to an injection (one of a long series of injections) by an intense fear of death, sense of depression, and hallucinations, all more or less transient. In the Swedish patients also the drug penetrated to the brain through the blood stream, but it is not certain whether this effect was due to the procaine or the penicillin component of the injection. In some of the Swedish patients no severe reaction followed the subsequent repetition of the injection, and the psychic disturbances called for no prolonged treatment. The Swedish observers believed that care must be taken to distinguish between this comparatively harmless reaction and the

much more serious and quite rare anaphylactoid reaction which should be taken as a definite contraindication to any further penicillin medication.

**Health Survey.**—In 1954 and 1955, 3,646 inhabitants of Stockholm over the age of 21 were invited to undergo a free medical examination including a complete case history, physical examination, sedimentation rate, hemoglobin estimation, red and white blood cell count, urinalysis, and test of feces for blood. An electrocardiographic examination was supplemented by roentgenograms of the chest in two planes and a gastrointestinal series. Of the 2,504 who accepted this invitation, only 479 showed no sign of disease. As many as 637 suffered from obesity and 425 from neurotic symptoms. Seven cases of malignant disease, 53 of anemia, 67 of cardiosclerosis, 191 of hypertension, and 14 of diabetes were discovered. In 430 cases the patients were referred to a physician or to a hospital for treatment. Many of the patients given this advice said they felt quite well. About 80% of the diagnoses had already been made at some earlier examination. Thus only 14 of the total of 26 diagnoses of diabetes were new. Of the patients between the ages of 40 and 50, 15% showed electrocardiographic abnormalities.

The three articles on this health survey, published in *Nordisk medicin* for Sept. 26, were supplemented in the same number by some frank comments by Dr. Gunnar Biörck. In his opinion, the fact that 31% of the recipients of the offer of a free medical examination rejected it showed an appalling lack of interest by the public in such an examination. On the other hand, if everyone wanted it, there would not be a large enough staff of examiners to provide it. It would be better to spend more on health education and on the promotion of the training and equipment of the medical profession. No amount of laboratory screening can replace careful history-taking and a thorough medical examination.

## UNITED KINGDOM

**Russian Influenza.**—Dr. V. M. Zhdanov and coworkers (*Lancet* 2:735 [Oct. 12] 1957) stated that the clinical manifestations of the influenza seen in Russia are fever (up to 104 F [40 C], mild catarrh of the respiratory tract at the onset, and sometimes, particularly in children, anoxia, vomiting, and diarrhea. The fever lasts four or five days, and the initial leukocytosis is followed by a leukopenia. The virus was obtained from nasopharyngeal washings by amniotic passage in chick embryos. The strains isolated belonged to type A, as shown by complement-fixation tests with S antigen, but the hemagglutination-inhibition test showed that they differed markedly from previously isolated viruses of type A. The subjects investigated had no antibodies to the new influenza virus strains, whereas they did have to previously isolated ones. This explains the high contagiousness of the new strains and the worldwide spread of Asian influenza within the last few months. The new strains will probably become established everywhere in two or three years. Influenza viruses are continuously changing their antigenic pattern, and the pandemic spread of the disease is connected with the appearance of new antigenic variants.

**Asian Influenza.**—The epidemic of Asian influenza has seriously affected the south of England, where half the children in some schools have been absent, and in large towns, such as London, the postal services have been curtailed. In Glasgow, the daily average of children absent from school has been 52,750. Fifteen deaths were recorded in one week in Manchester. The number of deaths reported in the 160 largest towns in England and Wales over a five-week period totaled 466. Reported cases of pneumonia average about 200 a week. There are 408,379 claims for national insurance a week, compared with 142,795 for the corresponding period in 1956. The difference is attributed to the influenza epidemic. The number of cases of the disease is not known, as influenza is not reportable, but the difference between the current national insurance figures and those of a year ago, i. e., just over 250,000 cases weekly, is a guide.

**Lord Nuffield.**—Mr. W. R. Morris (Lord Nuffield) celebrated his 80th birthday on Oct. 10. He was educated at Cowley village school, near Oxford. At 16 he was apprenticed to make bicycles, and on being refused a raise he started making his own. In 1913 he produced the first Morris-Oxford car, a 9 horse-power two-seater selling for $825. Mr. Morris industrialized Oxford and Cowley and within 25 years produced his millionth car. In 1926 he started making charitable bequests to medicine. In 1936 a grant of 10 million dollars was made to Oxford University Medical School. Other beneficiaries were the Radcliffe Infirmary and several teaching hospitals in London. Oxford University also received a further 5 million dollars, and the Royal College of Surgeons and of Obstetricians and Gynecologists have been beneficiaries. In 1939, the Nuffield Provincial Hospitals Trust was founded, with $6,250,000, to finance the coordination of hospital services. This was followed by the Nuffield Foundation in 1943 with a capital of 40 million dollars. The foundation has financed a remarkable range of research, mostly medical. A bequest just announced is $212,000 for a chair in pediatric surgery at London University. For his services Mr. Morris was made Sir William Morris and later Lord Nuffield. He has also been honored with the Fellowship of the Royal College of Surgeons, England. Lord Nuffield has been described as the greatest benefactor to medicine that Great Britain has ever had.

# MISCELLANY

## AGRICULTURE LOOKS TO THE FUTURE

**Charles B. Shuman**

I am happy to have a chance to visit with you this afternoon on this subject which is general enough to cover almost anything I want to talk about.

I am particularly glad to have had the chance to hear Congressman Harris and to have his philosophy on the dangers that are ahead of us with this third party that he talked about.

My remarks are going to fit in quite well with some of the things that were mentioned, but first I want to express appreciation on behalf of the American Farm Bureau and the state farm bureaus and all the county farm bureaus and some 500-and-some thousand farm families for the interest that the American Medical Association and the state medical associations are taking in our problems of rural health and the better medical care which we need in the rural areas—I might say the increased appreciation and interest that the American Medical Association and the state associations are taking.

I think there has been a marked improvement in the general knowledge of health, the facilities available, the number of doctors, and the caliber of the doctors that are available in rural areas in recent years. We still have some areas of need, and I am happy to say that our state organizations all report that almost without exception, and I think I can say without exception, the state medical associations are working closely with them to try to find ways and means of eliminating these areas of greatest need.

Several years ago we had an example in our state of Illinois of the kind of results that can come through effective cooperation between the state farm organization, the farm bureau in that case, and the state medical association, and I am happy that the man who thought of this idea is here, Dr. Harlan English, of Danville, Ill. Out of his idea and his committee's work in the Illinois State Medical Association came a teamwork and a joint sharing of financing for a scholarship program which he just now told me has resulted in 87 young men trained in medicine who in return for the sponsorship of the Joint Committee and some assistance, perhaps in some cases of scholarships, have agreed to return to rural areas that needed physicians to practice medicine.

This program has been influential also in changing the attitude of the folks in charge of the program of the administration of our medical schools, and gradually we are seeing some increased emphasis upon training for general medicine and general practice. I am not suggesting that we should not have specialists, but it is apparent we should not have so much emphasis on specialization.

This recent improvement is due then to group activity and the cooperation between your organization and ours and other organizations like them, and it is also due, I think, to the fact that rural people themselves are waking up to the need for better health facilities and better health care.

I think there is a third reason for this improvement, and that is the one I mentioned of the medical schools recognizing that the folks who are trained in medicine today should, at least some of them, be prepared to practice in general practice.

I might add a fourth one as a factor, and that might be the increased organization of folks in their voluntary health improvement associations and the emphasis that they are placing upon health problems in their own communities and the use of some of the funds to sponsor the training of nurses as well as the improvement of facilities for doctors.

I want to say just a little bit before I get into this general subject of agriculture and what it might be experiencing, that might be of interest to you in the medical profession, about some of the needs that we have in rural areas.

In the first place, I think that we need a little better health education in our public school systems in rural areas. Maybe we need it in urban areas, too, but we need a little better health education, particularly with emphasis on nutrition. At this point I would like to suggest that if there are any medical school people here, that as a layman and having experienced the care of a few doctors for a few different kinds of ailments as I went along, having had some occasion to look into the situation as to the status of nutritional education in not only our public schools but in our medical schools, I just wish there were a few medical schools in the country that placed adequate emphasis upon human nutrition in their curriculum. Maybe there are, but I think there are far more that have inadequate nutritional training in the course of study for potential doctors. As a farmer, I can tell you very quickly why I am interested in human nutrition.

Forty per cent of the 170 million people in the United States did not eat breakfast this morning, and we have got a lot of surplus farm products for sale. The President's personal physician notwithstanding, I am going to say right now, and stick my neck out a long, long way, just as a human being trying to live, I came to the conclusion a long, long time ago that breakfast is the most essential meal. If you are going to leave off any meal, I think you had better leave off one of the other meals, probably the night meal, rather than this wake-up meal, and there are plenty of medical authorities that agree with me.

I was quoted as saying the other day that if all the people in the United States would eat a farmer's breakfast we would be better off. I said an ade-

President, American Farm Bureau Federation.

Read before the Conference of Presidents and Other Officers of State Medical Associations, New York, June 2, 1957.

quate breakfast, and that might be, for one type of occupation, fruit juice and milk and one piece of toast, whereas for a farmer it might be something entirely different, but it should be an adequate breakfast, and 40 per cent of the people in the United States did not eat an adequate breakfast this morning.

Just think for a moment, from a farmer's standpoint, of how much more surplus we would get rid of if everyone ate an adequate breakfast. If it is true that their health is related to this wake-up meal, maybe if they would all eat a good breakfast, an adequate breakfast, not a farmer's breakfast, but an adequate breakfast, nutritionally balanced, maybe they would add two or three more years to their lives and we would have two or three more years during which to feed them, and maybe to doctor them. So I am speaking for both of us when I urge that we place increased emphasis on human nutrition in both our school system and our medical colleges.

I was shocked the other day to hear a doctor advise someone, a relative of mine, that he should not eat pork, shocked because there is absolutely no nutritional research which proves that pork is harmful. I asked why, and this doctor told his patient, "Because it is hard to digest." There is absolutely no nutritional research which proves that at all.

I asked this doctor whether or not he had had a considerable nutritional course of study in medical college, and I found that he had had one three-hour course in beginning nutrition.

Well, I just throw out a few facts here and a few prejudices as I go along.

The second need in rural areas is for better hospital and clinical facilities, and we are doing quite a bit about it and are moving forward. Not only are we helping to encourage young doctors to come back to rural areas to practice in many states, but we are also going together on a community basis to finance the construction of rural hospitals and clinics.

A third general need is in the area of expansion of prepaid hospital and medical plans. They are not perfect, of course, and we have done our share of criticizing, but they have represented a great step forward in the early care and diagnosis in treatment of a disease, and I hope that we can move even further along this road toward better, more adequate care for people in all areas of our country healthwise.

The fourth area of need for rural communities is for greater research, and this, of course, applies to all of us. Increased and more effective research not only in medical treatment, treatment with medicines, and surgery but in the field of nutrition which I mentioned is important.

There are other things that I think need to happen in a positive way. That is something that perhaps medicine, the profession, can't do much about, but which all of us in America can. We need to turn our thoughts toward encouraging people who live in rural areas, who are unemployed in rural areas, to seek more rewarding jobs, to find ways to raise the level of desires of some of the folks who live in the rural slum areas of America, to find ways to improve the educational opportunities and training opportunities, because many of our problems related to medical care are financial problems and many of these financial problems come as a result of people who do not have opportunity for full-time employment.

Unfortunately, we in agriculture are charged with the responsibility for somewhere between 1½ and 2 million of these families that are unemployed. They only have 60 to 90 days of productive work per year in agriculture. They pick up a little extra work otherwise, but their incomes are quite inadequate. It is a reflection on our educational system, on our vocational training system.

We have some problems in common—we on the farms and you in medicine. One of them is the problem of keeping up with the rapid change that is taking place in our respective professions. I suppose most of you are close enough to agriculture that you have observed the tremendously rapid changes taking place in agriculture. Some members of Congress have not found out about the rapid changes taking place in agriculture yet, but I am sure that those in Arkansas have and I am sure that most of our physician friends have.

In the last 15 years, we have increased our efficiency, our production per man per hour, by about 79 or 80 per cent. It is about as good an increase, or better, than most other industries.

You, too, have increased your efficiency, your know-how, your technical knowledge. One of our problems is to keep pace with the new knowledge that is coming on.

The second problem that we have in common, you in medicine and we on the farms, is trying to protect and preserve this free choice system that we think has succeeded, and I want to deal with that more than any other point in what I am going to talk about because I think that this is an essential thing for a future that is good in agriculture or in medicine. Our progress that we have had thus far in America in both medicine and agriculture is greater than any other country in the world, and it came to be under a system that differed from most of the economic political systems in use in other parts of the world. It is the only country where we have had a relatively free-choice system, and yet we have had greater progress in agriculture and medicine here than anywhere in the world. I dare say the doctors in the United States have the highest standards of living of any medical people, although I was told the other day by a fellow from South America that the greatest man—he used the expres-

sion "the greatest man"—in any country in South America was the doctor, and I suspect and in fact know that that is true.

In the same way, farmers in the United States have the highest standards of living of any agricultural people in the world. We may not be the greatest men in the community, but we do have the benefit of the best standard of living of any agricultural people on this earth.

It would be impossible to list a lot of the problems that we have in common, perhaps more than any other group. You folks in the medical profession have a great deal of pride in your individual opportunities.

If I am going to talk about this free choice system of ours and a good future on the farms of this country, and I would relate it directly to the profession of medicine, I must talk a little about socialism. Socialism is a nasty word, and yet I think that it is the major third party, congressman, that is abroad in the world—not as a political party, no. Norman Thomas, a very brilliant man and a socialist, made a statement a few years ago, and I am not going to quote the entire statement because it seems to reflect a little bit too much direction. He made the statement that there was no more need for a Socialist Party. You do not find very many socialist parties any more. But socialism is on the advance, it is on the march throughout the world. It is the real third party that is moving in, and I apologize to Congressman Harris for paraphrasing his very good idea, but it is definite throughout the world. It travels under different banners. In England it is the Labor Party. In Russia it is known as communism. In either case it is just another variation of socialism. In the United States it recruits folks from the modern Republicans as well as the northern Democrats, if I may distinguish. By the way, I am happy to be a Democrat myself, Mr. Congressman, but I thank God I am a southern Democrat—Southern Illinois.

If we were to recognize that socialism is an infiltrating thing which is moving into many political parties and many professions and many activities, we ought to define it, because it cannot be handled as a party. You cannot point to someone and say, "He is a socialist." You cannot do that. I know many folks in many walks of life, including politicians, who I think are guided primarily by socialistic principles, but I wouldn't call anyone a socialist because this is an infiltrating disease, a philosophy that is growing and marching foward not only in the United States of America, but throughout the world.

My definition of socialism is simply government control and ownership, government control of people and government ownership of property. You can say government control or ownership of property because you do not need to own it to have control over it.

The next question is, how far have we come down this road toward socialism. I have not yet said or tried to prove socialism is evil. I am just recognizing the fact that we have come quite a way. Thirty-three per cent, I believe it is, of our total national income goes to pay for the cost of government at all levels, not just federal government but states and local.

England has gone a little farther. They are at about the 51 or 52% level according to a member of Parliament who was in my office, and a member of the Labor Party, by the way, two or three weeks ago.

Sweden has gone quite a bit farther. I was in an international conference at Purdue University of farm organization leaders. I talked to the president of the farm organization in Finland. He said, "We believe that Sweden is about 74%, and Finland must be 2 or 3% farther." I said, "Where is Russia?" since many of the folks in their country have intimate relations with Russia. He said, "They are much farther than we. They probably are 80% government ownership and control of all property and all people."

We have quite a ways to go but we are on the way, and we are moving relentlessly, through both Republican and Democratic administrations, toward socialism. Good or bad, that is the road we are on.

We in agriculture are veterans in this deal. We are a little farther than most other professions. Twenty-five per cent of all of the agricultural production in this country looks to government for price and market. This, of course, is not the majority. It does not mean that we have gone so far we cannot turn back. In fact, I would not be here, I would not accept the responsibility I have with the American Farm Bureau if I did not think we were going to turn back. And let me say that our organization, before I start to influence you further, believes that this socialistic movement and this socialism that is pervading all of our economy to a certain extent cannot be conquered. You are already well under way, but I hope I can influence your thinking enough to see that socialism, this philosophy of dividing up everything equally, one share for one vote, this suppression of incentives, the substitution of security for opportunity, is evil because it strikes not only at our profession and our freedom as individuals but also at our Republic itself and at Christianity. Socialism is just as anti-Christ as is communism essentially. We will come back to that, because I want to mention two or three other things that I think we should bear in mind.

You know, socialism is like pregnancy. You cannot have just a little bit of it. It grows and grows. The experience of the world through many centuries proves this statement. I do not have the time to go back and pick up all the threads to show you how socialism has been tried over and over again

in the history of the world under different names, but it has, and almost invariably they start with just a little bit of it. They say, "We are not going very far, we are just going far enough to get the results we want and then we are going to stop," but it does not work that way.

Why? I think there is just one real essential reason. There are many other collateral reasons, but there is one essential reason as to why these folks who say, "We are going to have just a little bit of socialism, just a little bit of government interference, just a little bit of federal construction of school buildings,"—the reason they think they can stop is that they feel that just a little bit would be helpful and, as the President so naively said the other night, we surely will have sense enough to stop before we have gone too far down the road of socialized education and federal construction of schools.

I do not think we have because human history does not demonstrate that the people have enough sense to stop. They keep on until they destroy everything that they may have.

Let me illustrate by pointing out some socialized experiments that we have been conducting and the reason for the continual increase and the failure to turn back. It seems always that the proposed cure for the failure of one socialistic panacea is always another socialistic panacea. I think we have plenty of examples in agriculture, but maybe I should pick up two or three others.

Let us look abroad first and see what happened in England. Of course, the failure of government to operate these various activities that we know as government in business or government taking over this or that industry—the reason for the people asking for these things, and Congressman Harris is right, Congress does not do anything that people do not ask for, but the people ask for these things because they see need, an area of need. They saw an area of need in England, and they socialized steel and they socialized labor. In France they socialized the railroads. In Scandinavia it is the power companies and all business practically. And so the minute the government takes over it becomes a monopoly almost always, and then you have no comparison—nobody can tell whether it is efficient or not. When it gets in trouble, what do they do? Almost invariably they add to the structure and pass another law to try another variation of the socialistic experiment.

I want to mention just a few of the areas of greatest inefficiency and near failure that we have. I have mentioned these experiments abroad. Let us come home. Where is the greatest shortage of power in the United States? In the TVA area, the great social experiment in power.

Where has been the greatest reluctance, the greatest difficulty, to improve education? In the public schools of America, and I am not attacking the public school systems. It is a great institution. I am just simply recognizing one of the failures of government. In what industry do we have the greatest discrepancy in income in this period of tremendous progress otherwise in our country? In agriculture, where we have had the greatest governmental interference. And which of our crops, the production of which is returning the most disappointing returns to farmers? The crops that the government has had the most to do with the pricing and production policies. Just look at the record.

I said that in this matter of socialism the panacea is always more socialism. I heard a little story about a lady who came from across the water. She was going through customs over here, and one of the inspectors, checking the list of declared items against her luggage, found a bottle of clear liquid that she had not declared. He said, "Madam, what is in the bottle?"

She said, "It's some holy water I am bringing back from the old country."

He didn't take her word for it, but he took the stopper out and took a whiff. He said, "Madam, that is not holy water, that is whisky."

"By gorry," she said, "and another miracle!"

We have folks who are still looking for miracles. They are looking for easy ways to solve problems, and we have them in agriculture, too, and plenty of them. So the failures of socialism in agriculture have translated themselves into more and more panaceas.

Our organization has been party to the adoption of some of these panaceas. We were party to the original experiments because we had a very difficult time in the 20s and 30s. Then we came into the war, when demand based on war went up and prices with them. Fortunately, I think, and I think prudently, the leaders in our organization, after the war, during which time we needed increased production and during which time prices were fixed at high levels, our organization saw the error of this as a continuing way of life for agriculture and suggested some changes, but, unfortunately for American agriculture, the Congress did not see fit to follow these suggestions. So we have had continued fixing prices—and I am distinguishing between fixing prices and price support—and allocating the right to produce. It has got us into quite a mess.

From this mess I think we have learned some lessons. Twenty-five years of experience with government socialized agriculture has taught us some lessons that you may benefit from, perhaps. It may cause you to fight unrelentingly this idea that government can perform any service in the field of medicine. Personally, I do not think that they can, except for the services of regulation and policing and that sort of thing. I do not think government can perform any service for humanity, for individuals, that they cannot better perform themselves except for defense and regulation and the judicial

function and the regulation of our affairs with each other. When we get into this area of performing services, almost without exception you find that government is inefficient, and the inefficiencies are covered up because you cannot establish standards of comparison.

What are some of the lessons we have learned, and why did we have to learn this way? In the first place, we found that after twenty-five years of these programs we have piled up about 8 billion dollars worth of surplus commodities that nobody wants. That is why I am interested in getting everybody to eat breakfast—we have 8 billion dollars worth of commodities that there is no economic market for.

In the last six years, farm prices have fallen about 23%. I emphasize six years so you will be sure to understand that the price decline started in the Truman administration and continued through the Eisenhower administration. This is not a partisan political situation. We have many good Democrats and many good Republicans who early saw the error of these attempts to fix prices and allocate the right to produce.

We have found out several things that I think are facts. One of them is that the government cannot regulate production of agricultural commodities. They could but they will not. It is not politically feasible to regulate production, and every member of the Congress of the United States knows it is not politically feasible to regulate production, because if they cut the production of wheat to bring it down to what the consumption and the practical exports would be, every congressman from a wheat state would get kicked out. That is why it is not politically feasible to regulate the production of wheat or any of these major commodities. You cannot cut them enough but what farmers can make up for the cut by increased efficiency and use of fertilizer and everything else, or practically so. So we have found out a few things the hard way.

I want to emphasize and dwell just a moment on five or six fundamentals to a good future in American agriculture that we think we have discovered, the negative way, the wrong way, by experimenting with other things. They might fit in your business. The first of these, necessary for a good future in our business, and I think in your business, is preservation of the opportunity to change, freedom to change, freedom to quit growing one crop and start growing another, freedom for Dr. Green, for example, to move from Indiana to North Dakota to California, if anybody is crazy enough to make that kind of move, freedom to change, freedom to change from the practice of medicine to digging ditches if you want to, freedom for a small farmer to get big and a big farmer to get small.

This is absolutely contrary to many of the laws passed by Congress affecting agriculture in the last several years. They have been restricting our freedom to change. They say to me that if I have not raised wheat I cannot raise wheat, if I have not raised tobacco, I cannot raise tobacco. So they fix prices at a level which will cause all the folks who have been raising wheat to continue raising wheat whether they should or not, and the same is true of all who have been raising tobacco.

Of course, we find ways to get into the wheat business and the tobacco business. In fact, since congressmen depend upon votes—and I am for congressmen and I am for the Congress of the United States, the greatest legislative body in the world—I do not say it just because the congressman is here, but I am for Congress staying in the field in which they are adapted to work, and that is in legislation, in the development of political compromise. I am absolutely against, and our organization is against, Congress getting into an area of activity in which they have no capacity and no competence whatsoever, and that is the regulation of economic laws. The economic laws are just as fundamental and just as inviolable as moral laws or natural laws. When Congress goes to tampering with the law of supply and demand, which one of the senators down there has said does not exist anymore, they tamper with a law that is just as fundamental as the law that says the sun will come up at a certain time tomorrow. No manner of political panacea that they pass will affect the eventual functioning of that law of supply and demand.

It may delay it, it may confuse it, it may make the results worse, but it is inevitable, and it can't be repealed by Congress or the Parliament in London or anybody else. It is one of God's laws just the same as moral law and natural law, and it is just.

I had a neighbor who was unable to keep on farming in his poor, inefficient way. He was one of those unfortunate fellows who could not learn how to farm well, as I know there are some doctors who cannot learn to be good doctors. This fellow would not and could not learn to farm well, but due to the federal programs and the subsidies from Washington—and we got 5 billion dollars worth of them last year—he was enabled to keep on farming for four or five more years before his creditors finally said, "If you don't get enough government payments to pay us, we are going to foreclose on you," and they did.

Some of the folks in political power cry great tears for this fellow who was foreclosed out of agriculture, but what did he do? When he left agriculture, he got a job where he had supervision, and he likes his job better than he did farming. He makes three or four times as much income for his family. He is far better off after being forced to change. And yet the political law caused him to stay in an occupation for which he is not fitted five or six more years than he would have otherwise. Do not tell me that economic law is cruel. Polit-

ical law, when it tampers with economic principles and economic effect, is far more cruel than economic law.

Well, I am getting off on a sermon that I was going to preach at our church.

The first fundamental for an agriculture with a future is freedom to change, which has been interfered with in recent years by legislature panaceas like the old lady's miracle.

The second fundamental to a good future in agriculture, and I think it also applies to the medical profession, is competitive pricing, a market system. I think some of your troubles in medicine are because you have not had enough competitive pricing. I think sometimes that you are unjustly accused of excess charges, but I think there has been a little lack of competition in the medical profession. I think that they will be overcome much more quickly under a free choice system where you permit people to go into medicine than under a system regulated by government as it is in many countries where the politicians decide how many folks are going to be doctors and how many are going to be preachers or something else.

Competitive pricing in our business means pricing on a competitive basis of the things we buy as well as the things we sell. It means that we need competition in all areas influenced or threatened by monopoly pricing, and the greatest danger in my opinion is not the lack of competition in your profession or the lack of competition in business generally today. The greatest threat to us in agriculture is the monopoly power of big labor, where they have absolutely monopolized the power to price their product without regard to consumers and without regard to anything except what they can grab, what they can carry off. And so we think we need some control over this labor monopoly, and I think, thanks to Dave Beck, that we are going to get a little more control over this monopoly. It may be that Dave Beck was one of the greatest men in this period as far as the American people are concerned.

A third essential to agriculture with a future is a free price and market system. I must condition that by saying a relatively free price, because, after all, we have found there is a place for government regulation—absolutely there is a place for government as the referee. And so we recognize the need in a complicated economy like ours for a great and strong and well-managed and well-conditioned referee. Federal governments, state governments, local governments, should referee certainly, but not as a price maker, not as a producer. These are fields which cannot be taken over successfully by government. At least human experience so far has demonstrated that they cannot be taken over, and I do not believe we are going to find the way, at least not in this session of Congress. So, as I say, a free price and market system is a third fundamental.

A fourth fundamental to a good future in agriculture is freedom to accumulate capital, and I suppose doctors need capital, too. I suppose by the time you get through medical school these days you have depleted about all the capital you started with, maybe even piled up a backlog of unsatisfied capital demands. So capital accumulation is one of the foundation rocks in a system that works in this country.

One of the great threats to the accumulation of capital today is the extremely high cost of government at all levels. We have joined with you at least in part in recognizing that some professions—farming, medicine, acting—have periodically high periods of earning and then a long period of preparation, or peaks in earning cycle. You do not start in like most people in this country who earn at a fair level and then gradually go up and then taper off. Farming is a good deal the same way. It has its peaks and valleys. The medical profession is way down here, then way up, and then down. We recognize that tax laws need change and watching, and the Reed-Keogh Bill is the kind of thing that must come. We must protect the right of individuals to accumulate capital.

A fifth essential to a good future in agriculture, and I think in your business, is adequate educational research, and you, like us, depend a good deal on government for the support of education and research. The individual doctors, the individual farmers, cannot finance or carry research that needs to be done, and that is again a very good place for dependence upon government and one in which we have used our government through the years to advantage, a very basic thing to a good future.

What I am trying to say is, there are plenty of areas where we need and can use government properly to assure a good future for farmers and medical people and everyone else, and then there are some areas where we will destroy ourselves if we try to use government, and that is in the area of making a market, making a price, producing a product, and producing a service.

The last one of these essentials I am going to mention is the need of expanding markets. I assume you need expanding markets in medicine. If all the boys going to medical schools succeed in graduating you are going to need more people, and if you keep on curing diseases and do not have more people and they do not live longer, your market is going to start shrinking up.

We have a problem in American agriculture with a 10 or 12% excess producing capacity in the United States. We have to find expanded markets, and we look abroad, and we can sell quite a bit of our stuff abroad, we think, although in recent years the federal government has usurped this privilege of exporting farm products. Most of our farm products in the last year that were exported were government-owned products.

I want to tell you how they sell their products. The reason we cannot sell any cotton abroad is because the federal government is willing to spend, in order to get other people to buy our cotton—and they bought a lot of it last year; why shouldn't they, under the system we have had? Do you know that for every bale of cotton that we sold abroad last year we put almost $60 in cash on top of each bale to get the foreigners to take it? There was $42 of direct export subsidy and almost $20 of additional subsidy that went into it indirectly.

For every bushel of wheat we sold abroad to foreigners, in order to get them to take it in preference to Canadian wheat, we dropped 82 cents into each bushel. Is it any wonder that the Canadians are so mad at us, they could slit our throats? I do not blame them. Wheat is our big export crop, and we are putting 82 cents a bushel into every bushel to get foreigners to buy our wheat instead of theirs.

This kind of monkey business, this kind of nonsense, this kind of national suicide, is going to have to stop.

I do not know whether this is related to the idea that maybe what we need is federal government subsidies, increasing subsidies, in the field of medicine. Some folks have suggested that it is a terrible crime that the federal government didn't pay for all the poliomyelitis shots. If it did, it would be a short step from the poliomyelitis shots to some other kind of shots, I suppose, maybe even tranquilizers, finally, as we become more and more frustrated trying to produce enough to pay the increasing level of taxes to support a socialistic state. This is the road that we have embarked upon. We have not turned around yet, either. Witness the President of the United States who said the other night, if I did not misunderstand him—and I ought not to because I heard him say it afterwards in a little private gathering—that 71.8 billion dollars was the very lowest level that it would be safe for us to operate the federal government on. We have come a long way down this road toward complete dependence upon federal government, and it does not matter to me whether you call it socialism or what you call it—just big governmentism is good enough, and it is still the same road that the Soviets went with the revolution. I do not think we will spill blood to get there, but according to the best reports from behind the Iron Curtain, they are well pleased with the progress we are making toward joining them. And why shouldn't they be? We have been going down this road at about ¾ of 1% a year increase I think in the dependence upon government at all levels for services and goods, which individuals in many cases could provide much more efficiently and better.

I said in the beginning that I wanted to relate this, since it is Sunday and I did not get to teach my Sunday School class this morning and you are the victims to Christianity.

I think that big government, whether you call it socialism, communism, nazism, or whatnot, is the greatest threat to a free agriculture and a free medical profession. I think it is the greatest threat to our democracy, our republican form of government, and I think it is the greatest threat there is to Christianity.

I want to tell this little story because it illustrates it. It is about Pat, who worked in a machine shop on one side of the cemetery. He lived in a little house over on the other side. He worked on the night shift and he got off at midnight. Each afternoon as he went to work, he cut straight through the cemetery. But at night, of course, being a little superstitious in such matters, he very carefully walked around the cemetery, an extra half mile, going home.

One night he was very tired and he said to himself, "Pat, there is no use to be so superstitious. You might just as well cut straight through the graveyard at night as in the daytime." He did, and nothing happened. It being a moonlit night, it helped him see his way through. Thereafter, night after night, he cut through the cemetery on his way home.

One night the moon was not shining, and the sexton, unknown to Pat, had cut a fresh grave, and Pat fell in 6 ft. down. Not being a very tall fellow, he could not get out. Finally, he gave up, and sat down to wait until morning when someone would find him. As he sat there, along came another traveler who fell in with him. The other fellow did not see Pat, and Pat thought to himself, "I will not let him know I am here. I will wait, and when he gets out, then I can get out."

The other fellow tried and tried and he could not get out, either. Finally Pat thought he ought to let him know he was there, so he said in a deep voice, "You will never get out!" But he did. The other fellow had the incentive.

Incentive, my friends, is a great Christian driving force. It is what makes people try to do better. It is what makes people work. It is the ingredient that goes into progress, whether in the medical profession or farming or anything else, and when government moves in, leveling off, dividing up the right to produce, fixing prices at a fixed level, incentive is gradually destroyed.

The greatest Teacher of all, you know, placed His first emphasis upon individual responsibility. He would not bow His head to the superior power of church or state. He said, "This cup is mine. It is you who decide the course of events."

So I hope you join with us, and I hope you cooperate with our state organizations in trying to make a success of a free enterprise, free choice system, and that we fight, as we must, the socialist conspiracy which is moving in on us from all sides.

# MEDICAL LITERATURE ABSTRACTS

## INTERNAL MEDICINE

**Varicella Pneumonia.** T. N. Hunnicutt Jr. and I. Berlin. Dis. Chest 32:101-106 (July) 1957 [Chicago].

The authors describe 3 cases of severe varicella pneumonia in women between the ages of 21 and 27 years. The first patient was 6 months pregnant. On admission to the hospital she appeared acutely ill, was coughing frequently and raising small amounts of frothy, blood-tinged sputum. There were typical vesicles over the face, head, oral mucosa, trunk, and thighs. There was slight cyanosis of the lips and nail beds. She was placed in an oxygen tent and was given penicillin intramuscularly and erythromycin orally. The patient's course was rapidly downhill, and she died 18 hours after admission, 4 days from the onset of illness. She had never had chickenpox, but her 2 children were recovering uneventfully from the disease. Autopsy revealed extensive varicella pneumonitis of all lobes of both lungs. Lipschutz intranuclear inclusion bodies were observed in the septal cells.

The second patient appeared equally ill and toxic, except for cyanosis, but she recovered in 10 days. Because of the experience with the first patient and the fact that viral instead of bacterial pneumonia was suspected, the patient was given 20 cc. of gamma globulin intramuscularly in the hope that antiviral antibodies in this material would be effective. The treatment comprised administration of tetracycline given primarily to prevent secondary pyoderma, penicillin combined with streptomycin, diphenhydramine (Benadryl) hydrochoride to control pruritus, and sedation as needed. There has been no proof that the sulfonamides or antibiotics are effective in the treatment of purely viral disease. It is not thought that this one case proved that the use of gamma globulin altered the patient's course specifically, but the use of this plasma protein has a rational basis in other viral diseases. Gamma globulin should be given a trial in varicella pneumonia.

The third patient was given oxytetracycline, and recovery resulted in 8 days. Of 11 patients with varicella pneumonia whose cases were collected from the literature, 7 recovered and 4 died.

**Effect of Antibiotics on Purulent Sputum in Chronic Bronchitis and Bronchiectasis.** A. C. Douglas, A. R. Somner, B. L. Marks and I. W. B. Grant. Lancet 2:214-218 (Aug. 3) 1957 [London].

The authors attempted to assess the value of the systemic administration of penicillin in controlling infection in chronic bronchitis and bronchiectasis, and, where penicillin failed, the relative merits of chloramphenicol and oxytetracycline (Terramycin). The value of routine bacteriological studies was also investigated. The response to antibiotic methods was studied in 131 adult patients, 89 with chronic bronchitis and 42 with bronchiectasis. In the first stage of the trial, crystalline penicillin was given intramuscularly in doses of either 250,000 or 500,000 units every 6 hours, a daily dose of 1 million or 2 million units. At first, this dose of penicillin was given for 5 days, but later for 7 days. In patients in whom the sputum was definitely becoming less purulent but was not completely converted to mucoid after the standard course of penicillin, administration of the drug was continued until the sputum became free of pus or there was evidence of relapse. Patients who failed to respond to penicillin were admitted to the second stage of the trial. These patients were allocated to 1 of 2 treatment groups, according to a list of random numbers. Patients in one group received 0.5 Gm. of chloramphenicol and in the other group 0.5 Gm. of oxytetracycline every 6 hours, also, at first for 5 and later for 7 days. In addition to antibiotics, the patients received antispasmodics where necessary, and those with bronchiectasis were given postural drainage.

Forty-seven of the 89 patients with bronchitis and 9 of 42 with bronchiectasis responded to penicillin. No difference was observed between the results obtained with 1 million and 2 million units daily. Eighteen of the 23 patients treated with chloramphenicol responded completely, while in the remaining 5 patients there was no response. Eleven of the 28 patients treated with oxytetracycline responded completely; a partial response was obtained in 5 patients; and in the remaining 12 patients there was no response. Routine bacteriological examination of the sputum was of no value in predicting the response to treatment in any of the 3 antibiotics used.

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**Indirect Gastric Secretory Studies: A Comparison of Tubeless Gastric Analysis and Plasma Pepsinogen Determination as Screening Procedures.** M. L. Sievers and G. L. Fischer. Am. J. Digest. Dis. 2:363-376 (July) 1957 [New York].

Tubeless gastric analysis to study the acid-producing ability of the parietal cells and plasma pepsinogen determination to evaluate the elaboration of pepsin by the chief cells are 2 simple procedures to determine the secretory function of the stomach. These 2 tests were performed on the same day on consecutive patients admitted to a medical ward of the St. Louis Veterans Administration Hospital. Patients in whom a diagnosis of organic gastrointestinal disease was made during hospitalization were excluded from the comparative study. An azure A resin was used for the tubeless gastric analysis. However, when results of the first procedure were negative (i. e., indicative of possible achlorhydria), a quininium resin was usually used to perform a second test, since, with a different indicator, the waiting period for excretion of the dye (often 7 to 10 days) could be avoided. Intubation gastric analysis was also performed as often as possible in those with initially negative resin results. When the tubeless gastric analysis was positive, subsequent tests were not made, since a positive result is reliable evidence of ability to secrete free acid. Of 236 consecutive patients who underwent both tubeless gastric analysis and plasma pepsinogen determination, 76 had negative ("achlorhydric type") results on the initial azure A resin test. No other gastric analyses were done in the 160 patients whose tubeless tests were positive. Among the 76 with negative resin results, no further confirmatory tests were performed in 22; an additional tubeless procedure was done in 47 of the 54 other patients; and 38 individuals were intubated with evaluation of the acid content of the aspirate after parenteral administration of histamine.

An elevated blood urea nitrogen level (above 25 mg. per 100 ml.) occurred in 19 patients in this study. Since renal insufficiency influences both the tubeless gastric analysis (giving false-negative results by preventing excretion of azure A) and plasma pepsinogen activity (causing falsely high levels, since the plasma content of this material is related to clearance by the kidneys), only the 217 patients whose blood urea nitrogen level was not elevated were used in comparing the findings of the 2 procedures. Patients with pernicious anemia, gastric cancer, duodenal ulcer, and azotemia and those with diabetes mellitus undergoing depot insulin therapy were also studied. Low pepsinogen levels in the blood tended to occur with anacidity, while a significantly higher mean pepsinogen level was noted with acid-secreting ability. Similarly, low pepsinogen values were found in the presence of pernicious anemia and gastric cancer, while elevated results were noted with duodenal ulcer, although individual exceptions occurred in most conditions. When positive, tubeless gastric analysis results were shown to be reliable evidence of ability to secrete acid. A negative resin finding was noted to be strongly suggestive evidence of anacidity or hypochlorhydria, whereas the likelihood that true achlorhydria existed was markedly increased if a second tubeless gastric analysis was also negative. The 2 indirect tests of gastric secretory function were shown to complement each other. Achlorhydric patients tend to have low plasma pepsinogen values and those having high pepsinogen values in the blood usually secrete free acid. The authors believe that these 2 procedures will find considerable application as screening tests for altered gastric secretory function because of their simplicity and accuracy.

**The Shoulder-Hand Syndrome: Historical Review with Observations on Seventy-three Patients.** P. S. Rosen and W. Graham. Canad. M. A. J. 77:86-91 (July 15) 1957 [Toronto].

The 73 patients with the shoulder-hand syndrome observed by the authors were admitted to the wards of the Toronto General Hospital and Sunnybrook Veterans' Hospital. Many patients in whom the symptoms are not disabling do not come to the hospital, and the syndrome may be overlooked in the presence of other serious disease. The average age of the 73 patients was 63 years, the youngest being 31 and the oldest 80 years of age. Only 3 patients were under 45 years of age, and in 2 of these the syndrome developed following trauma. The associated diseases or factors that might possibly be precipitating influences are listed. Ten patients had no noticeable associated illness. There was a history of trauma in 5. Ten patients had symptoms of severe cervical disk degeneration. Eighteen patients had a history of recent (within 8 weeks) and 3 of old myocardial infarction (6 to 24 months previously), 6 patients had electrocardiographic evidence of heart disease but no clear clinical signs, 1 patient had essential hypertension, and 1 had cor pulmonale. Thus 29, or 40%, of the patients had cardiovascular disease. Four patients had spinal cord lesions with quadriplegia. There were 9 patients with cerebral lesions, including 1 with tumor, 7 with cerebrovascular accidents, and

1 with severe head injury. Miscellaneous conditions included prolonged bed rest (6 months or more) in 2 patients; abdominal surgery in 1; block dissection of the neck in 1; and fractured neck of the femur in 1.

There was an equal incidence of left-sided, right-sided, and bilateral involvement. Predominance of left-sided lesions, suggested by others, was not found in this series. The essential diagnostic features of the condition are pain and limitation of shoulder movement, with swelling and tenderness of the hand and inability to fully flex or extend the fingers. Osteoporosis of the hand was found in over two-thirds of the patients examined and may be an indication of the severity and duration of symptoms. Early recognition is important, for results are poor if treatment is long delayed. No form of treatment is entirely satisfactory, but the use of cortisone and corticotropin in addition to judicious rest with early passive and increasing active movement gave the best results.

**Lung Scar Cancers.** C. Raeburn and H. Spencer. Brit. J. Tuberc. **51**:237-245 (July) 1957 [London].

The majority of lung cancers are too large to furnish accurate information concerning their origin by the time the lung is removed at autopsy or operation. Almost all the material illustrating the importance of scarring as an etiological factor was discovered by routine sectioning of all scars and suspicious areas in lungs examined at autopsy supplemented by surgical specimens removed early in the course of lung cancer. While studying the early stages in the development of lung cancer, the authors had found and reported in 1953 that it was possible to relate many peripheral lung cancers to previous scarring. They had also demonstrated that all stages, from simple reparative hyperplasia of bronchiolar epithelium to fully developed carcinoma, could be found in association with lung scars. Similar observations had been reported by Rössle in 1943 and by Lüders and Themel in 1954. The authors present the histories of 12 patients with small lung cancers growing in relation to scars of different etiology (selected from a larger collection of these lesions) and 3 patients with carcinoma arising from the walls of both a tuberculous cavity and chronic lung abscesses.

The authors emphasize the importance of chronic inflammation as an exciting factor in lung cancer, particularly with reference to the peripherally situated growths. The ability of the terminal bronchioles to proliferate all through life in response to lung damage differentiates these structures from the large bronchi. Reparative hyperplasia of small bronchioles may progress to malignant change, and all histological types of lung cancer can result, though columnar-celled tubular cancers are the commonest. The causes of the lung damage included chronic infection, tuberculosis, infarction, and foreign bodies. Damage and scarring of the lung was the essential factor, and the cause of such change was of secondary importance. The early spread of cancer from small peripheral growths to the regional lymph nodes and lobar bronchi was demonstrated, and the possibility of such secondary spread to lobar bronchi being confused with a primary growth arising in these structures is emphasized.

**An Outbreak of Tuberculosis in a School.** P. D. Moss and J. H. Fairweather. Brit. J. Tuberc. **51**: 258-264 (July) 1957 [London].

When a 1-year-old infant died with tuberculous meningitis the infection was traced to a woman who worked in the food service of a day school. It was then realized that she was the likely source of infection in the case of 2 4-year-old children who also had tuberculosis. The woman had been taken on as a temporary worker without medical examination. About 16 months before tuberculosis was demonstrated, she had been ill with "influenza." Though she was soon back at work she was from that time obviously in failing health. The first case mentioned above occurred 6 months before she left the school and 9 months after her influenzal illness. The school had 400 pupils, and the junior department, in which the woman worked, was attended by children aged between 4 and 8 years. Chest films were taken in 339 (85%) of the children and in all the teachers and domestic workers. Five pupils had positive findings, but reports by physicians and hospitals brought the total to 15 children with primary tuberculosis. Thirteen of these were in the Junior Department of the school. One was a 13-year-old pupil in the senior part of the school, and one was the 1-year-old infant who had died. All the pupils took dinner at the school.

The subsequent survey of the school with tuberculin tests is described. There was evidence that 23 pupils with positive tuberculin reactions had probably contracted the infection from milk. They showed evidence of cervical or abdominal tuberculosis without any evidence of chest involvement and had taken "unsafe" milk. Of these 23 patients, 9 came from the town and 14 from the rural area. When the whole school was divided there were found to be 281 pupils from the town

and 127 from the rural area, with 32.3% and 31.5% positive reactors respectively. This investigation again underlines the fact that contact of a person with open tuberculosis with young children is very dangerous. There is a growing awareness that it is desirable to have X-rays taken at regular intervals in the case of teachers. There is much less care taken in selection of other workers.

**Studies on Copper Metabolism: Portal (Laennec's) Cirrhosis of the Liver.** C. J. Gubler, H. Brown, H. Markowitz and others. J. Clin. Invest. **36**:1208-1215 (Aug.) 1957 [New York].

In hepatolenticular degeneration (Wilson's disease) a disease that involves both the brain and the liver, the copper metabolism is always impaired. The authors investigated whether the copper metabolism is deranged also during the neurological manifestations associated with cirrhosis of the liver. They found that the mean value for the total amount of copper in the liver of 12 patients with cirrhosis was 19 mg. as compared with a value of 8.5 mg. in 5 normal subjects. In 6 of the patients there was a normal amount of copper in the liver. In 3 of the patients there was a greatly increased amount of copper in this organ. The amount of copper in the heart, kidneys, muscle, and spleen was not increased significantly over the normal. The mean value for the total amount of copper in the brain of 9 patients with cirrhosis was 6.5 mg. as compared with a value of 6.0 mg. in 5 "normal" subjects. It is concluded that it is unlikely that the alterations in copper metabolism are of any significance in the pathogenesis of the neuropsychiatric manifestations of Laennec's cirrhosis of the liver. It is suggested that in patients with cirrhosis and an associated cholangiolitis the excretion of copper into the bile is impaired and this results in retention of the element in the liver.

## SURGERY

**Peripheral Arteriosclerosis: Arterial Grafting Procedures—Indications and Results.** E. J. Wylie, J. S. McGuinness and F. M. Binkley. California Med. **87**:71-74 (Aug.) 1957 [San Francisco].

The authors present their experience with grafting operations following resection of aneurysms in 32 patients. The aneurysms were located in the abdominal aorta in 28 of the patients and in the aortic arch, the popliteal artery, the subclavian artery, and the femoral artery in 1 patient each. In 14 of the 28 patients with abdominal aneurysms the resected segments were replaced by synthetic bifurcation prostheses of polyvinyl sponge (Ivalon). In all the other 18 patients homografts were used. The results obtained with the homografts were better than with the synthetic material. Twenty-three of the 28 aneurysms of the abdominal aorta were resected in the unruptured state, and 4 of these patients died (3 of the first 5 but only 1 of the last 18). In 5 patients the aortic aneurysm was resected after rupture had occurred; 3 of these patients survived. The uniformly fatal outcome of untreated ruptured abdominal aneurysms makes it obligatory for the surgeon to operate immediately after the diagnosis is made.

**Five Hundred Cases of Pulmonary Resection for Tuberculosis.** J. P. Roger, J. M. Lemieux, M. Beaulieu and others. Canad. M. A. J. **77**:195-199 (Aug. 1) 1957 [Toronto].

A study of 500 consecutive pulmonary resections for tuberculosis performed on 486 patients between 1951 and 1955 is reported. The patients were divided into 2 groups: 200 were operated on during 1951, 1952, and 1953 and 300 during 1954, 1955, and 1956. The most common indication for resection was persistent cavitary disease in 350 patients, in whom cavitation persisted in spite of bed rest and drug and collapse therapy. Pulmonary resection was also recommended in 68 patients with residual caseonecrotic disease, who had either a history of reactivation or were in poor socioeconomic condition or failed to cooperate in medical treatment, and in 42 patients with one destroyed lung. Tuberculous activity was not controlled by surgical collapse in the thoracoplasty failure group of 40 patients. Sputum positive for tubercle bacilli was found in 392 (78.4%) of the 500 patients. All patients undergoing pulmonary resection were treated with antibiotics. Pneumonectomy was performed in 125 patients, lobectomy in 209, segmental resection in 127, and wedge resection in 39. The mortality rate in the first group of 200 patients was 8%, in the second group 3.4%. The over-all mortality rate was 5.2%. There were 17 early deaths, within 60 days after operation, and 9 late deaths. The main postoperative complications were empyema alone or associated with bronchopleural fistula, spread or reactivation of preexisting disease, and wound sinus. Of the 460 living patients, 36 were operated on since January, 1956; no attempt is made to evaluate these cases. A total of 396 patients could be followed up. Of these patients, 343 (86.6%) are working or able to work. Of the remaining 53 patients, 38 are still hospitalized and 37 have sputum positive for tubercle bacilli. The causes of disability are preexisting bilateral tuberculosis in 8, uncorrected postoperative complications in 21, and reactivation in 24. Pulmonary resection is emerging as the treatment of choice in tuberculosis, replacing collapse therapy. With the diseased area removed, the danger of spread is considerably reduced. Pulmonary resection, except for pneumonectomy, is

usually more conservative of pulmonary function. The disease becomes rapidly and permanently inactive in most of the patients. This can be achieved by a single-stage operation which leaves no deformity of the chest. The results will continue to improve.

**The Treatment of Intractable Plantar Warts.** R. Anderson. Plast. & Reconstruct. Surg. 19:384-388 (May) 1957 [Baltimore].

Intractable plantar warts which have failed to respond to conservative therapy are probably secondary pressure phenomena rather than of virus origin. Permanent cure requires excision of the wart and its associated callus, resection of the underlying bony prominence, and resurfacing of the soft tissue defect with pedicled plantar skin to avoid scar formation at the site of excision. These procedures were carried out 15 times in 14 patients with intractable plantar warts in the course of the past 2 years. The result has been considered good, with essentially normal and painless function, in 10 patients. There was no recurrence of wart at the site of operation in the other 4 patients, but tender areas of callus developed over adjacent weight-bearing areas. These have been controlled by conservative measures, and have not been disabling. The results to date have been superior to either bone removal without local flap transfer or flap transfer alone. Simple excision of the skin lesion has been generally unsatisfactory. While not perfect, the use of the combined procedure has given most satisfactory results.

**The Management of Visible Hemangiomas.** H. M. Blackfield, F. A. Torrey, W. J. Morris and B. V. A. Low-Beer. Am. J. Surg. 94:313-320 (Aug.) 1957 [New York].

The authors believe in the spontaneous involution of the most common hemangiomas of infancy and childhood; they therefore suggest conservatism in the management of these hemangiomas. In some cases involution progresses slowly, while in a small percentage regression does not occur. After having observed 700 patients, the authors recommend the following classification of hemangiomas as more practical than other previous clinical or histological classifications: (1) involuting (infantile)—superficial (strawberry, capillary); combined, superficial and deep (capillary and cavernous); deep (cavernous); (2) noninvoluting (adult)—port-wine stain (nevus flammeus), without or with subsequent growth; true cavernous, without or with subsequent growth; venous racemose aneurysm and arteriovenous fistulas; diffuse hemangiomatosis, with gigantism; spider angioma; angiofibroma; diffuse telangiectasia; malignant (rare) hemangioendothelioma, hemangiopericytoma. In the preceding series more than 200 untreated patients with the involuting type of hemangioma have been observed; spontaneous involution has occurred in all cases. Many patients treated earlier by accepted methods have experienced involution exactly as those who have had no treatment, casting doubt upon the effectiveness of some forms of treatment. When surgery is forced by parental pressure and is attempted during the growing phase of the large involuting type of hemangioma, the lesion can rarely be completely excised and growth will continue in the residual vascular tissue until the latent period is reached. If operation is delayed until involution has started, then one may perform a more conservative excision, as the residual vascular tissue will involute spontaneously. If early treatment is required to placate the parents, some homeopathic method of treatment at infrequent intervals should be carried out. Plastic surgery is necessary to remove the residual cosmetic disfigurements of the large hemangioma in the preschool period. However, surgery which is performed a number of years following the involution of large hemangiomas is much simpler and less dangerous than that attempted in infancy. Radical methods of treatment which may damage or prevent the growth of normal tissues are contraindicated.

**Renal Failure Following the Administration of Intraperitoneal Neomycin.** L. D. MacLean. Minnesota Med. 40:557-558 (Aug.) 1957 [St. Paul].

The author presents a 55-year-old man in whom an emergency laparotomy was performed, which revealed a gangrenous, perforated appendix. A generalized peritonitis existed with accumulations of pus in the pelvic and in both subphrenic spaces. Cultures of the pus yielded Escherichia coli. The purulent material was aspirated, and peritoneal lavage was done with isotonic sodium chloride solution. A 1% solution of neomycin was placed in the abdominal cavity prior to closure. Polyethylene catheters were placed in both subphrenic spaces and in the right lower quadrant for postoperative instillation of neomycin solution. Three grams of neomycin in the form of a 1% solution was introduced intraperitoneally during the first 36 hours after operation. The temperature returned to normal, and intestinal function seemed normal on the 4th postoperative day. Later, the patient became progressively more lethargic and confused, and he died with bronchopneumonia on the 16th day after the operation. At autopsy the kidneys showed swelling of the proximal tubular epithelium and hydropic degeneration. The microscopic appearance indicated a toxic nephropathy.

While the amount of neomycin given to this patient was less than one-half that considered safe on the basis of experimental and clinical observa-

tion, it is believed that the renal failure was produced by neomycin, because the renal function was normal before operation, and progressive renal failure developed within 24 hours of the time intraperitoneal neomycin therapy was started. Observations on this patient and a review of the literature suggested that the dose of neomycin which can be safely placed into the peritoneal cavity has not yet been determined.

**Thrombosis of Internal Carotid Artery Treated by Arterial Surgery.** C. Rob and E. B. Wheeler. Brit. M. J. 2:264-266 (Aug. 3) 1957 [London]

Direct arterial surgery was performed on 27 patients with internal carotid occlusion. The series included 11 patients with partial occlusion and 16 with complete occlusion. All patients with partial occlusion had definite arterial surgery carried out, with a good blood flow at the end of the procedure. Two early postoperative arteriograms and 2 reexplorations of the wound have shown the vessel to be still patent. Six of the 11 patients have been either asymptomatic or objectively improved after the operation. Two patients showed no change and the remaining 2 had temporary postoperative deterioration. One patient died 4 weeks postoperatively. This patient had spontaneously stopped taking oral anticoagulants 3 days before death. Autopsy revealed a cerebral hemorrhage on the side opposite the previous carotid occlusion; both carotids were patent. Of the 16 patients with complete occlusion, the blood flow could be restored in only 4. None of the patients with complete occlusion showed improvement which was not consistent with the normal progress of the disease. Two of these patients died, and autopsy revealed a pulmonary embolus and a myocardial infarction as the presumptive causes of death. Only 2 of the 27 patients had postoperative exacerbation of their neurological symptoms. The patients most likely to benefit from direct arterial surgery are those with incomplete occlusions who first seek medical aid because of symptoms of cerebrovascular insufficiency. Restoring the blood flow in these patients not only frequently relieves the symptoms of cerebrovascular insufficiency but may also interrupt a pathological chain of events which frequently ends in irreversible cerebral damage.

**Acute Colonic Obstruction in Schistosomiasis Japonica: A Clinical Study of 40 Cases—14 Associated with Carcinoma.** M. C. Ch'en and W. S. C. Ch'en. Chinese M. J. 75:517-532 (July) 1957 (In English) [Peking].

The authors report on 32 men and 8 women between the ages of 25 and 56 years with acute obstruction of the colon caused by schistosomiasis japonica. This condition results from chronic and repeated infections of the rectum and colon with Schistosoma japonicum and is frequently observed in endemoepidemic regions. Malignant degeneration occurred in 14 patients in whom adenocarcinoma was associated with the lesions. Intestinal perforation and fecal fistula occurred in 4 patients. Urologic complications occurred in 5 patients with involvement of urinary bladder, prostate gland, ureter, or kidney. The obstructing lesions due to schistosomiasis were located in the rectum in 25 patients, in the sigmoid colon in 6, in the transverse colon in 4, in the cecum in 2, in the splenic flexure in 2, and in the hepatic flexure in 1. The intestinal obstruction was complete in 15 patients, nearly complete in 8, and partial in 17.

Thirty patients were operated on and 35 operations were performed. Eleven patients were subjected to resection, and 19 had colostomies performed. Four patients died in the hospital, and 9 died after discharge from the hospital. The prognosis of the disease is poor and the resectability rate low. However, some of the patients who underwent resection were working 4 years after the operation. Surgical extirpation is the treatment of choice. Pentavalent sodium antimony gluconate may be tried first in patients with incomplete obstruction, but surgical treatment should follow if antimony therapy fails. Intestinal perforation, urologic involvement, and malignant degeneration are among the most frequent and serious complications and largely account for the high mortality in patients with far-advanced disease. The exact mechanism of the malignant changes is not clearly understood, but serial microscopic examinations of biopsy and surgical specimens suggest that epithelial metaplasia or polypoid formation may precede the development of adenocarcinoma. Prevention of obstruction of colon by chronic lesions of schistosomiasis depends on early and adequate treatment of the infection with antimony drugs.

## DERMATOLOGY

**A Study of Photosensitivity Occurring with Chlorpromazine Therapy.** J. H. Epstein, L. A. Brunsting, M. C. Petersen and B. E. Schwarz. J. Invest. Dermat. 28:329-338 (May) 1957 [Baltimore].

Chlorpromazine causes reactions on exposure to sunlight in some patients. The authors describe studies carried out to determine the incidence and, if possible, the nature of the photosensitivity produced. The subjects were 72 patients from the Rochester (Minnesota) State Hospital who had a variety of mental disorders, the majority being schizophrenics. The patients were divided into 2 groups: Group A consisted of 58 patients with no history of previous chlorpromazine intake or no

known reaction to the drug if they had taken it. Group B consisted of 14 patients with histories of possible previous cutaneous reactions to chlorpromazine. The eruption in 2 of these appeared to have been induced by exposure to the sun. Each patient was given an average "minimal erythema dose" to an area on the back. The dose consisted of a 4-minute exposure at a distance of 24 in. from a "B" carbon-arc source. In addition, a comparable site was exposed for 5 minutes, from the same distance, through a filter that absorbs almost all the effective erythemogenic ultraviolet rays shorter than 3,100 A.

Abnormal reactions developed in 9 of the 72 patients in test sites exposed to ultraviolet rays in the spectral zone below 3,100 A. These reactions appeared to be exaggerations of the normal sunburn response. A 1% solution of chlorpromazine hydrochloride, examined spectrophotometrically, showed complete absorption of the wave lengths between 2,000 and 3,700 A. Thus the absorption pattern of the drug included the ultraviolet rays shorter than 3,100 A. Examinations of the urine of 19 of the patients revealed no abnormal porphyrins. The presence of weakly positive reactions for porphobilinogen in certain specimens is unexplained. None of the subjects showed clinical evidence of hepatic dysfunction or porphyria. It appears that at least a small percentage of patients treated with chlorpromazine will become abnormally sensitive to certain wave lengths in the sun's spectrum. Possible mechanisms of the production of photosensitivity by chlorpromazine have been discussed.

## UROLOGY

**Wandering Kidney.** F. A. Eggink. Arch. chir. Neerl. 9:99-108 (No. 2) 1957 (In English) [Arnhem, Netherlands].

The terms ptotic, wandering, or floating kidney are usually employed in the discussion of a kidney that descends more than 5 cm. when the patient moves from the recumbent to the standing position. This corresponds with an x-ray displacement over the width of 1 vertebral body. The old theory that floating kidney occurs exclusively in asthenic subjects is no longer tenable, since roentgenologic studies have disclosed floating kidneys in subjects of athletic physique. While the disappearance of the adipose capsule is generally regarded as one of the causes, a decrease in the quantity of perirenal fat is rarely observed at nephropexy or autopsy. The author believes that the main cause of nephroptosis is to be found in the secondary fixation apparatus of the kidney, the suspension ligaments of the colonic flexures. It is illogical to regard a wandering kidney as a sequel of a direct trauma or of recurrent trauma, but a ptotic kidney could give rise to symptoms as the result of trauma. In some patients a kidney may descend more than 4 vertebrae without giving rise to symptoms, whereas in others a nephroptosis of the extent of 1½ vertebra is associated with violent colics and hydronephrosis.

The kidney can be kept in place with a corset which is tied from the bottom upwards; fitting and wearing require radiological control. Nephropexy can be undertaken after a prolonged observation. Colicky pains disappeared after nephropexy in 7 of the 8 patients discussed; the exception was a female patient with renal calculi. Nephropexy in 2 patients showing hydronephrosis was followed by a return to normal in one and by further enlargement in the other. Nephropexy is indicated (1) in patients in whom nephroptosis produces symptoms and is associated with hydronephrosis of the involved kidney and (2) in patients with vague abdominal symptoms in the vicinity of a ptotic kidney. Surgical treatment is indicated in this group only if all other causes of the symptoms are exluded and if treatment with the aid of a corset (under radiological control) has been ineffective.

**Pathogenesis and Sequelae of Unilateral Dwarf Kidneys in Juvenile Persons: Early Infantile Pyelonephritis or Hypogenesis?** H. U. Zollinger. Schweiz. med. Wchnschr. 87:990-995 (July 27) 1957 (In German) [Basel, Switzerland].

The author reports on 21 female patients between the ages of 5 months and 36 years and one 20-year-old man with unilateral dwarf kidney. The dwarf kidney was on the left side in 9 patients and on the right side in 12; in 1 patient the side has not been stated. Five patients had pyuria and 1 had albuminuria; but all had hypertension. Only 4 patients had a history of "pyelitis"; the histories of the other patients did not mention the kidneys. Nineteen of the patients underwent a nephrectomy. Three of the 19 died postoperatively, 1 of malignant nephrosclerosis on the contralateral side, and 2 of apoplexy 6 and 2 months after the operation. Of the 16 patients who recovered from the operation, 7 were free of hypertension; 1 no longer had hypertension but his clearance values still remained unsatisfactory; 2 patients had been operated on too recently for an evaluation; 5 had been freed of their chronic pyuria; and 1 still had hypertension.

The weight of the dwarf kidney varied from 5 to 60 Gm. A double renal pelvis and a split ureter were observed in 5 specimens. The upper half of the kidney was contracted in most of the specimens. A mild partial hydronephrosis was found in 1 specimen and a mild total hydronephrosis in another. Microscopically, radially arranged scar areas were found in which the glomeruli were either completely missing or presented as small, hyaline

balls. The tubuli were partly atrophic or completely destroyed. The interstitial tissue showed cicatricial changes and contained relatively sparse almost purely lymphocytic infiltrates. The intrarenal arteries and arterioles showed a pronounced fibrosis of the intima with mild or moderate hyperplasia of the elastica interna. Cicatricial tissue was seen between the mucosa of the renal pelvis and the border of the cortex of the medulla in some sections. The collecting tubules were destroyed. The renal pelvis showed subepithelial thickening by scars, while the epithelium was not changed. Arteriosclerosis of varying degree was found in the healthy portions of the specimens and in the contralateral kidneys. Definitely hypogenetic areas were found in only 2 specimens. They consisted of islands of connective tissue with loosely arranged nonhyalinized fibers, situated in the border of the cortex of the medulla of the kidney. The circular arrangement of the fibers around a centrally situated gland-duct was typical. The gland-duct had a one-layer cylindrical epithelial lining with small cells.

A review of the literature revealed that most of the workers considered these dwarf kidneys to represent hypogenetic modifications of the organs. The reported data of the 22 patients suggest, rather, that the origin of the dwarf kidneys is pyelonephritic and that infection in early infancy may be responsible. Duplication of the renal pelvis and ureter, and small hypogenetic tissue areas in rare cases, apparently play the part of a localizing factor. Purely hypogenetic contracted kidneys are extremely rare. Consequently, intensive treatment of pyuria in early infancy is imperative, since pyuria may often be a sign of pyelonephritis. Every juvenile patient with hypertension should be subjected to an urologic examination, so that nephrectomy could be performed before the occurrence of vascular changes due to hypertension.

**Transcystoscopic Injection of Tumors of the Bladder with Radioactive Colloidal Chromic Phosphate.** W. R. Christensen and R. G. Weaver. J. Internat. Coll. Surgeons **28**:138-144 (Aug.) 1957 [Chicago].

In experiments on dogs under pentobarbital sodium anesthesia a panendoscope was introduced into the urinary bladder. A dilute solution of radioactive phosphate ($P^{32}$) in the form of colloidal chromic phosphate was injected into an area 2 cm. in diameter on the posterior aspect of the bladder. The concentration of the solution was 50 $\mu$ per cubic centimeter. A total dose of 500 to 700 $\mu$ was used. A cystectomy was done, 24 hours later in some animals and 48 hours later in others. Radioautographs showed that intervals of 0.5 cm. and volumes of 0.5 cc. containing 25 $\mu$ of $P^{32}$ gave the most desirable distribution of radiation. When the distance was increased to 1 cm., the areas showed definite patchy distribution. Radioautographs taken 24 hours after the injection showed strict localization, which became confluent after 48 hours. It was also noted that there was practically no escape into the perivesical tissues. A quantitative assay showed nearly complete retention of the isotope in the bladder wall within 60 hours.

Six patients with inoperable grade 3 or 4 papillary carcinoma of the bladder incorporating either one or both ureteral orifices and showing mild to moderate ureteral obstruction on the intravenous program were given interstitial transcystoscopic injections of radioactive colloidal chromic phosphate through and around the ureteral orifice in an amount considered sufficient to eradicate the tumor. The equipment for the injections comprised a no. 24 Brown Burger cystoscope and a no. 6 French ureteral catheter with a 0.25-in. 25-gauge needle attached to one end and a regular Luer-lock adapter to the other. The operation was performed with the aid of low spinal anesthesia. Thus far no stricture formation has resulted. Hydronephrosis has subsided and a normal configuration of the intrarenal structures has returned in 4 patients. In these patients, however, only one-third to one-half of the total tumor area was treated by injection. Marked hematuria occurred in 4 patients, beginning 3 weeks after the injection and lasting for 2 to 3 weeks. Since these tumors had been treated only partially, it is possible that the hematuria was coming from the sites into which no injection had been made. Six to 8 weeks after the injection had been made, the tumor was no longer apparent in the areas of injection. The mucosa showed moderate telangiectasia. Pyuria was absent in most patients.

No definite conclusions should be drawn from this pilot series, but the authors believe that interstitial transcystoscopic injection of radioactive colloidal chromic phosphate may well be a valuable adjunct to the treatment of vesical carcinoma. $P^{32}$ emits pure beta rays and is therefore safer to handle, with less exposure of hospital personnel, than are isotopes with gamma emission. The transcystoscopic approach can be used successfully wherever a needle can be introduced but is especially well adapted to the vesical neck, the trigone, or the posterior portion of the male urethra. The injections are best confined to small multiple tumors or to single ones less than 3 cm. in diameter.

**Clinical Aspects and Treatment of Urogenital Tuberculosis: Report on Patients Seen in the Last 10 Years.** G. Palchetti. Sett. medica **45**:313-321 (June 15) 1957 (In Italian) [Florence, Italy].

One hundred six patients with tuberculosis of the kidney and 60 with tuberculosis of the genital organs seen by the author in the last 10 years are reported on. There were 69 male and 37 female

patients with renal tuberculosis. Most of them were between 30 and 40 years of age, some between 40 and 50 and a few between 20 and 30. The right kidney was involved in 39 patients, the left in 31, and both kidneys in 36 patients. Most patients presented lesions of the bladder. Forty-five patients were operated on and were also treated with antibiotics, 61 were treated with antibiotics only because of poor general condition, advanced age, bilateral localization, previous nephrectomy, unwillingness to undergo operation, presence of progressive extraurinary lesions, absence of renal lesions at roentgenology but positive urine tests, or mild lesions observed at roentgenology. One patient died during the operation; the postoperative course of the remaining patients was generally good. Complete regression and healing of the lesions of the bladder occurred in 27 patients, marked improvement in 12, and very little improvement in 6. Among the 61 patients treated with antibiotics best results were observed in those patients treated with streptomycin combined with aminosalicylic acid or isoniazid. Lesions of the bladder improved markedly in 50 patients; 11 patients did not respond to antibiotics. Improvement in the lesions of the kidney was observed in 8 patients, 6 with unilateral lesions, 1 with lesions in the only kidney present, and 1 with bilateral lesions; pyuria disappeared and the general condition improved. Tendency toward some improvement was observed in 26 patients who are still under control; in these patients the pyuria became less frequent and the bacilluria less marked. In the remaining 8 patients, lesions of the kidney did not improve; however, the antibiotics had a beneficial effect on the lesions of the bladder.

Twenty of the 60 patients with tuberculosis of the genital organs were between 30 and 40 years old, 17 between 20 and 30, and the others belonged to different age groups. Thirty patients were subjected to epididymectomy, 12 to partial castration, and 2 to resection of the epididymis and of the vas deferens. These patients were treated with antibiotics with good results. The remaining 16 patients were treated with antibiotics alone. Stabilization of the lesions and improvement of the general and local condition was observed in some patients only. The authors believe that surgery is still the therapy of choice in patients with tuberculosis of the genital organs.

**Sexology of the Paraplegic Male.** A. B. Zeitlin, T. L. Cottrell and F. A. Lloyd. Fertil. & Steril. 8:337-344 (July-Aug.) 1957 [New York].

One hundred paraplegic and quadriplegic men between the ages of 21 and 68 years, whose spinal injuries had lasted from 1 to 38 years, were studied in regard to sexual ability and fertility. Trauma was the causative factor in 90 patients; 4 had a spinal-cord tumor, 4 transverse myelitis, and 2 spinal-cord hemangioma. Thirty-three patients had cervical lesions, 21 had upper thoracic lesions ranging from the first to the 5th thoracic level, 39 had lower thoracic lesions ranging from the 6th to the 12th thoracic level, and 7 had lumbar lesions. Reflex erections are mediated through the sacral portion of the spinal cord and can occur with any lesion above the sacral level. The higher the spinal lesion, the more probable is the occurrence of a satisfactory erection. Sixty-four patients had complete erections, 22 had incomplete erections, and 14 had no erections. Only 26 patients had successful intercourse. Five of these patients underwent orgasm, but only 3 had ejaculations. Eighty-eight pregnancies had been produced by the 100 men before the onset of paraplegia, but only 1 pregnancy had occurred after that.

Since the duration of the spinal injury averaged 6 years and the obtained fertility rate was but 1%, the outlook in regard to the male paraplegic attaining fatherhood is extremely dim. Suggestions to raise the fertility potential of the paraplegic male include insemination with frozen partitioned ejaculates according to Tyler and Singher's technique (*J. A. M. A.* **160:**91 [Jan. 14] 1956). Most of the paraplegics cannot ejaculate and, therefore, the electrical stimulation procedure may be used to obtain the semen necessary for the frozen technique. Judicious use of hormones may be a valuable adjunct in correlating the commonly found spermatogenic arrest.

**Bilateral Testicular Seminoma Associated with Bilateral Cryptorchidism.** A. Kummer. Arch. chir. neerl. 9:148-154 (No. 2) 1957 (In English) [Arnhem, Netherlands].

The 29-year-old man whose history is presented had pain in both inguinal regions. The lower part of the abdomen showed a marked bulge, the swelling extending to just above the umbilicus. Percussion revealed dulness. Palpation indicated the presence of a tumor the size of a child's head; it was firm and had an irregular, nodular surface. Since the testes were not in the scrotum, it seemed obvious that the patient had malignant degeneration of one or both abdominally retained testes. At the operation the 2 testes with the connecting bridge of tumor tissue were removed. There were no metastases, and convalescence was uneventful. The man was in excellent condition 4½ years after the operation. Commenting on the frequency of incomplete testicular descent, the author cites large-scale army statistics according to which incompletely descended testes were found in 0.23% of examined

recruits. The question whether the risk of tumor formation is increased with undescended testes is answered affirmatively by nearly all investigators. A survey of the literature indicates that the risk of malignant degeneration of an undescended testis can be estimated at about 3% and that it is nearly 10,000 times more frequent than in men with normal bilateral descent of the testes.

## OPHTHALMOLOGY

**Visual Loss Following Mitral Commissurotomy for Mitral Stenosis.** J. E. Alfano, R. E. Fabritius and M. A. Garland. Am. J. Ophth. 44:213-216 (Aug.) 1957 [Chicago].

Mitral commissurotomy for mitral stenosis, with its attendant intracardiac manipulation, has introduced another cause for arterial embolization. The authors present the histories of 2 patients in whom visual loss followed the operation of mitral commissurotomy for mitral stenosis. In each case the visual loss was thought to be due to the lodgement of a saddle embolus at the bifurcation of the middle cerebral and the posterior communicating and posterior cerebral arteries. As a result of this, the blood supply to the visual radiations was impaired. In each patient the bilateral involvement of the visual pathway produced blindness (light perception only), probably by the development of a bilateral hemianopic defect. In the second patient the embolus had lodged on the left side, with subsequent involvement of the left visual radiations, giving rise to a right hemianopic defect in the visual fields. The usual therapeutic measures consisting of vasodilators and repeated stellate ganglion blocks appear to be ineffective. The prognosis for the return of the visual field should be guarded, although visual acuity may return to normal.

**Retinitis Pigmentosa, Acanthrocytosis and Heredodegenerative Neuromuscular Disease.** A. L. Kornzweig and F. A. Bassen. A. M. A. Arch. Ophth. 58:183-187 (Aug.) 1957 [Chicago].

The authors present the history of a boy who had been born of consanguinous parents and who had a fairly typical retinitis pigmentosa, a diffuse heredodegenerative neuromuscular disorder, and a peculiar malformation of red blood cells known as acanthrocytosis. Celiac disease had developed at the age of 9 months but had subsided after treatment had been continued for a year. The boy has been under observation for 8 years, during which time the neurological and ocular symptoms have progressed and the appearance of the red blood cells has remained unchanged. In a previous report the authors had presented the history of the 17-year-old sister of this boy, who also had an atypical type of retinitis pigmentosa, progressive neuropathy, and abnormal red blood cells, referred to as acanthrocytes. It is believed that this combination of symptoms represents a clinical entity of a hereditary nature. A similar case was presented by another author. In that case the parents of the patient were second cousins, and retinal changes were absent. In the brother and sister, retinitis pigmentosa occurred without macular involvement in the boy and with macular degeneration in the girl. The neurological signs and symptoms appeared rather late in all the patients, and the possibility that they were sequelae of the celiac syndrome has been suggested. The neurological disorder probably belongs to the group of hereditary ataxias. The red blood cell abnormality, which is striking, is evidently an inherent part of the over-all picture. Consanguinity plus the presence of the traits in both parents could explain why this condition is so rarely seen.

**Riley-Day Syndrome (Familial Dysautonomia): Concerning the Etiology of the Corneal Pathology: An Ocular Survey of Nineteen Cases.** S. D. Liebman. A. M. A. Arch. Ophth. 58:188-192 (Aug.) 1957 [Chicago].

The author presents a survey of 19 patients with the Riley-Day syndrome, who ranged in age from 18 months to 17 years, all of whom were of Jewish extraction. Observations on 3 of these patients had been described earlier in greater detail. The first of these had severe ulceration and extensive opacification of the cornea, similar to the patients previously described by Dunnington. The second patient showed only a mild superficial disturbance in the corneal epithelium, without actual ulceration but with considerable turbidity of the corneal stroma. This lesion was located in the lower one-third of the cornea, in contrast to the first patient, in whom it was primarily central. The third case was discovered on routine examination of a child with known Riley-Day syndrome but with no previous history or symptoms of ocular involvement. The cornea in this child showed only faint scarring inferiorly, just within the limbus, having the appearance of etched glass, and this scarring was detected only with the aid of a magnifying device. The variation in the severity of corneal involvement in these three patients prompted the present survey.

Ten of the 19 patients showed some corneal pathology. Of these, 3 were of the severe neuroparalytic keratitis variety and 7 showed minimal superficial scarring in the lower one-third of the cornea, more suggestive of exposure keratitis. There were 2 patients with corneal involvement who had none of the "dehydration symptoms." Apparently,

5th nerve weakness, with corneal anesthesia, diminished lacrimation, and possible "trophic disturbances," is fundamental to the development of the lesion. Exposure of the corneas in sleep and "dehydration symptoms" may play a secondary role. Treatment should be directed toward minimizing these various factors by the instillation of 0.33% methylcellulose drops in the daytime and a bland ointment at night. In very severe cases, tarsorrhaphy may be required.

## THERAPEUTICS

**Respiratory Arrest Following Intraperitoneal Administration of Neomycin.** B. M. Webber. A. M. A. Arch. Surg. 75:174-176 (Aug.) 1957 [Chicago].

Respiratory arrest following the intraperitoneal administration of neomycin occurred in a 65-year-old patient in whom fecal contamination of the peritoneal cavity was present. The proposed dose was to be 50 ml. of a 1% solution. By error the drug was mixed as a 10% solution. This was not known to the operator, and 5 Gm. of neomycin sulfate was introduced into the open abdomen. Within 10 minutes the patient ceased breathing. She was maintained on artificial respiration. The patient had been through 15 hours of respiratory arrest. Her further postoperative course was uneventful. Only 5 similar cases have previously been reported. Two of these patients were infants; both died. The other 2 were adults who received 3 Gm. of neomycin intraperitoneally. Both patients survived, one after 3 and the other after almost 48 hours of respiratory arrest. The 5th patient was given 2 Gm. of intraperitoneal neomycin sulfate following a laparotomy and developed respiratory arrest within 10 minutes. Respirations returned after 6 hours of arrest, but the patient did not survive. All patients in whom respiratory arrest following the intraperitoneal administration of neomycin occurred were anesthetized. It is, therefore, possible that the toxic action of neomycin is potentiated during anesthesia or that the effect on respiration may be due to the combined action of several agents. The oral and intraluminal routes of administration of the drug seem to have no effect on respiration. It appeared that intraperitoneal administration of neomycin is potentially unsafe for treatment of peritonitis.

**Ankylosing Spondylitis Treated with Cortisone and Allied Substances.** C. R. Croft. Brit. M. J. 2:137-139 (July 20) 1957 [London].

Eleven men and 3 women, between the ages of 25 and 65 with advanced and painful ankylosing spondylitis in whom other methods of treatment including radiotherapy had failed, were treated with corticotropin, cortisone, and prednisolone. Corticotropin was employed in doses of from 10 to 25 units, given once or twice daily according to supply and symptomatic response. Later, cortisone was used in doses of from 50 to 100 mg. daily, but recently this drug has been replaced by prednisolone given in doses up to 15 mg. daily. There was an appreciable degree of relief of symptoms, which had not been obtained by other means. The relief of pain was rapid and was accompanied by some increased freedom of movement. Treatment was stopped in 2 patients with continuing relief. Prednisolone appears to be the most effective preparation and least liable to cause moon-face.

**Asthma and Antibiotics.** A. Jacquelin, M. Roman, M. Clément and others. Semaine hôp. 33:2659-2666 (July 10) 1957 (In French) [Paris].

The authors observed 44 patients with various infectious diseases who developed respiratory reactions to antibiotic treatment, ranging from rhinitis and spasmotracheal bronchitis to a most severe asthma. In 12 patients with infections of the bronchopulmonary system asthma occurred as soon as an antibiotic was given. Asthma was aggravated in 14 patients; to 2 of these aminosalicylic acid was given additionally, causing recurrence of a most severe asthma, which subsided immediately after the drug was withdrawn. Infectious rhinitis and sinusitis were treated with antibiotics in 7 patients in whom asthma developed and disappeared after the withdrawal of the antibiotics. A group of 8 patients with various infectious diseases and treated with antibiotics presented allergic respiratory manifestations; 3 had asthmogenic allergic reactions related to their profession. Cutaneous allergic manifestations associated with those of an asthmogenic kind were seen in 8 patients. More than one-third of all patients had no history of allergy, and some had family histories of allergic manifestations. Every antibiotic can be considered as a potential asthmogenic agent. Those given in aerosol form appeared to be particularly noxious.

**Clinical Research on the Hypotensive Effect of a New Reserpine Preparation.** S. Bardelli, S. Citi and S. Faldi. Sett. med. 45:345-349 (June 30) 1957 (In Italian) [Florence, Italy].

The authors report on 40 patients with marked hypertension treated with a pure reserpine preparation. Special capsules that permitted slow absorption of the drug were used. The patients were 45 to 87 years old; 20 were over 70 and 13 between 60 and 70. The drug had a very good effect in 10 patients, good in 22, fair in 5, and negative in 3. An

average drop of 38 mm. Hg of the systolic pressure and 26.6 mm. Hg of the diastolic pressure were observed. The effect of the drug became manifest 2 to 3 days after the beginning of the treatment, and maximal effect was observed within 5 to 10 days. Treatment lasted 2 to 3 months in most patients and up to 4 months in the remaining few. A dose of 1 mg. of the drug per day divided in 2 or 4 equal subdoses was given. This dose was increased with good effect to 1.5 to 2 mg. per day in patients who did not respond to it. Improvement was observed in 2 or 3 days; subjective improvement was noticed in patients whose blood pressure did not respond to the treatment. The pulse rate was lowered 15 beats per minute. The blood pressure was still low in 20 of 30 patients seen 1 month after the suspension of the treatment. Marked improvement in retinopathy was observed in 8 of 24 patients; best results occurred in younger patients with mild atherosclerosis.

**Thyroidal Depression Following High Doses of Vitamin A.** J. Logan. New Zealand M. J. **56**:249 (June) 1957 [Wellington].

The studies reported were concerned with the thyroidal uptake of radioactive iodine ($I^{131}$) before and after the oral administration of vitamin A in 7 patients, of whom 2 were cretins, 1 had pulmonary carcinoma, 1 had Hodgkin's disease, 2 had breast carcinoma, and 1 had lymphosarcoma. The patients were given daily 1 tablet of vitamin A acetate containing 50,000 I. U. The thyroidal uptake of $I^{131}$ was tested again after at least 3 weeks of treatment with vitamin A, and it was found to be depressed in all of the patients. The author points out that, since the New Zealand National Formulary recommends a daily dose of 100,000 I. U. of vitamin A for adults for 5 days, it is evident that the thyroidal uptake of $I^{131}$ may become depressed.

**Sodium Diuresis from Amphenone Given to Patients with Cirrhosis and Ascites.** S. J. Wolfe, B. Fast, J. M. Stormont and C. S. Davidson. New England J. Med. **257**:215-218 (Aug. 1) 1957 [Boston].

Amphenone (1,2-bis[p-aminophenyl]-2-methyl propanone-1-dihydrochloride) affects both thyroid and adrenocortical activity in animals and man. The adrenal effect is reflected in reduction of plasma hydrocortisone and corticosterone concentrations and in reduced urinary excretion of their metabolites. Depressed sodium excretion in sweat, saliva, and feces, as well as in urine of patients with hepatic cirrhosis and ascites, who also are known to excrete large amounts of aldosterone in the urine, suggests an endocrine basis for abnormal fluid and electrolyte retention. Summerskill had given short courses of amphenone to 4 patients with cirrhosis and ascites and observed increased urinary sodium excretion in 2. The authors present observations on 3 patients with hepatic cirrhosis complicated by ascites. The ascites had failed to respond to routine diuretic measures. Sodium intake was limited to about 10 mEq. daily and protein intake to 60 to 80 Gm. An earlier experience with amphenone had indicated its propensity to produce, in patients with cirrhosis, a state similar to impending hepatic coma, with somnolence, slurred speech, confusion, and flapping tremor. This effect could be partially ameliorated by concurrent prednisone administration, which, in addition, would overcome the influence of gluococorticoid suppression by amphenone.

After a short control period, 10 mg. of prednisone was administered thrice daily for 7 to 10 days, after which amphenone was added in doses up to 6 Gm. daily for 3 to 7 days. This was followed by another period of prednisone alone, and in 2 cases the study was concluded with a final control period. Urine was collected in 24-hour aliquots. Serum and urine were analyzed for sodium and potassium. Sodium diuresis, with weight loss, was observed in all 3 patients, presumably as a result of suppressed aldosterone production. Adverse neurological manifestations, probably related to the sedative properties of amphenone, were observed and limited its usefulness as a therapeutic agent. However, if less toxic analogues of equal biological potency can be synthesized, the results of this study suggest their potential usefulness.

**The Limited Use of Chlorpromazine in Bronchial Asthma.** A. L. Michelson and R. C. Lowell. Am. J. M. Sc. **234**:31-34 (July) 1957 [Philadelphia].

A group of 7 asthmatic patients, all of whom had highly reversible disease and a strongly allergic family history and who were currently being treated for pollen and dust sensitivity, and 7 normal controls were given the drug intravenously and studied with closed-system spirometry. The pulse rate increased in 6 of the normal and 3 of the asthmatic patients after chlorpromazine injection, remained unchanged in 3 asthmatics, and fell in one asthmatic and one normal patient. Blood pressure levels fell in 5 of the 7 asthmatics, remaining unchanged in the other 2, and the respiratory rate increased and remained unchanged in a like number of asthmatic patients. The tidal volume decreased in 6 of 7 patients in both groups. No significant differences were noted in either group either in total vital capacity or electrocardiographic recordings. Sedation was the only consistent effect, and that in itself is not compatible with asthmatic relief, as it merely sublimates the signs and symptoms that would otherwise alert the physician.

# QUERIES AND MINOR NOTES

## COLD VACCINES

To THE EDITOR:—*There are several "bacterial antigen" preparations on the market which have been used intermittently as a preventive measure against the common cold. Have there been any control studies which have resulted in a conclusion that this vaccine is effective as a common cold preventive? As far as is presently known, is this vaccine recommended as a preventive health measure? Of what use is this vaccine as a therapeutic agent?* *M.D., Ohio.*

ANSWER.—The clinical condition known as the common cold probably results from a variety of undefined viral and bacterial etiological agents. Specific immunization is thus not now attainable. Attempted prevention by bacterial antigens has been directed toward building resistance to known or suspected bacterial pathogens found in the nose and throat during the illness. Studies to evaluate the effectiveness of "bacterial antigens" advocated for the prevention of the common cold are difficult to design and carry out. Some of the problems of evaluation are the inclusion of placebo controls, lack of objective criteria of clinical signs and symptoms, irregular clinical follow-up of individuals under observation, and inequality of control groups to test groups in respect to age, family status, and occupation. While some studies report beneficial results, those which are best designed and largest fail to indicate any protective effect of bacterial vaccines against the common cold.

A status report of the American Medical Association Council on Pharmacy and Chemistry and Council on Industrial Health (*J. A. M. A.* **126**:895-897 [Dec. 2] 1944) concludes there is no evidence of value for such vaccines. Reports since then (Dickson, Abbott, and Davis: *A. M. A. Arch. Otolaryng.* **66**:1-6 [July] 1957) fail to obtain evidence of protection in well-controlled and well-observed groups. Indeed, the repeated injections of some vaccines is reported to induce sensitivity and uncomfortable reactions on the part of patients. "Control of Communicable Disease in Man" (ed. 8, New York, American Public Health Association, 1955) states there is no recommended immunization against the common cold. Acceptable studies on the effectiveness of bacterial vaccines as a therapeutic agent are lacking and there is no valid evidence of beneficial effect on the course of mild upper respiratory infections.

## LUMBAR PUNCTURE AND DAMAGE TO INTERVERTEBRAL DISK

To THE EDITOR:—*Has anyone connected the occurrence of ruptured intervertebral disk with prior lumbar puncture and the possible local injury of its fibrocartilage when the spinal needle was introduced a trifle too far?* *M.D., California.*

ANSWER.—The physician can best be answered by direct quotation from Dr. Daniel C. Moore's textbook, "Complications of Regional Anesthesia" (Springfield, Ill., Charles C Thomas, Publisher, 1955):

> Damage to the intervertebral disc by trauma from the spinal needle has been proposed by Pease, and Dripps and Vandam, as a possible cause of back pain following spinal tap. Wiberg, while performing back operations under local anesthesia, has caused lumbo-sacral pain by pressing on the external surface of the annulus fibrosus, and Lindblom during discography has noted pain as the needle is inserted into the disc for this procedure. However, in a personal communication to Arner, Lindblom notes that over 500 disc punctures have been performed using Diodrast (iodopyracet) solutions without any immediately noted contraindications. Nevertheless, a number of reports have appeared in the medical literature citing disc lesions following spinal punctures.

However, personal experience and the contacting of many extremely busy orthopedic surgeons and neurosurgeons who are consultants in a large metropolitan area have failed to uncover any cases in which the operating surgeon sincerely believed that needle trauma was an important part in the etiology of the disks seen. However, it would seem to most of these gentlemen that a degenerated disk existed and that there was a weakness in the annulus fibrosus. In this case, the needle puncture may be a precipitating factor.


**References**

Pease, C. N.: Injuries to Vertebrae and Intervertebral Disks Following Lumbar Puncture, Am. J. Dis. Child. **49**:849-860 (April) 1935.

Dripps, R. D., and Vandam, L. D.: Hazards of Lumbar Puncture, J. A. M. A. **147**:1118-1121 (Nov. 17) 1951.

Wiberg, G.: Back Pain in Relation to Nerve Supply of Intervertebral Disc, Acta orthop. scandinav. **19**:211-221, 1949.

Lindblom, K.: Diagnostic Puncture of Intervertebral Disks in Sciatica, Acta orthop. scandinav. **17**:231-239, 1948.


The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

Arner, O.: Complications Following Spinal Anesthesia, Acta chir. scandinav., supp. 167, 1952.

Epps, P. G.: Case of Degeneration of Intervertebral Disc Following Lumbar Puncture, Proc. Roy. Soc. Med. **35**:220-221 (Jan.) 1942.

Baker, A. H.: Lesion of Intervertebral Disk Caused by Lumbar Puncture, Brit. J. Surg. **34**:385-388 (April) 1947.

Gellman, M.: Injury to Intervertebral Discs During Spinal Puncture, J. Bone & Joint Surg. **22**:980-985 (Oct.) 1940.

Everett, A. D.: Lumbar Puncture Injuries, Proc. Roy. Soc. Med. **35**:208-210 (Jan.) 1942.

ANSWER.—A number of surgeons have been aware of the possibility of injury to the intervertebral disk by spinal puncture needles. When a lower lumbar spinal puncture is done, the needle is usually directed accurately at the intervertebral disk. This fact has been used by some surgeons in the diagnosis of disk disease. A needle is deliberately inserted into the intervertebral disk, and saline solution or a contrast medium is injected under pressure. If less than 0.5 cc. can be injected, the disk is considered to be intact. If 2 cc., 3 cc., or more is injectable, the disk is considered to be degenerated or probably ruptured. If contrast medium is used, x-rays are made. A number of surgeons carry out this type of testing of disks on the operating table, inserting a small needle deliberately into the disk and injecting saline solution under pressure, basing the above interpretations on the results observed. No one has reported harmful results to intact disks as a result of this procedure, provided that small-caliber needles are used. Supervision of myelograms has made many orthopedic surgeons and neurosurgeons aware of the possibility of penetration of the intervertebral disk.

Personal observation of the intervertebral disks in more than 500 laminectomies would seem to indicate that the diagnosis of ruptured intervertebral disk is made much more often than such a diagnosis is actually justified by anatomic findings. The diagnosis of a ruptured disk is an "easy way out," and some very prominent surgeons, notably Dandy, have given widespread support to the idea that all low-back pain, whether or not accompanied by sciatica, is due to degenerative changes in intervertebral disks and herniation or rupture. Such conclusions are not borne out by the facts, but many years will be required to eradicate this impression from the medical literature, and it is impossible to estimate the harm done by articles, such as those written by Dandy.

As early as 1933 Dr. Edward Compere reported a case in which a spinal puncture was done on a boy, 14 years of age. It seemed to the waiting surgeon that the needle was in very deep and might be in the intervertebral disk. An x-ray was taken. The needle was in the center of the disk. The needle was then withdrawn, and immediately a second x-ray was taken. This revealed that there had been a collapse of the disk, evidently due to release of the still fluid portion of the nucleus pulposus.

This consultant observed two cases in the military service in which careless spinal puncture with large needles was followed by subsequent collapse of the fourth lumbar intervertebral disk, confirmed by serial x-rays taken over a three-month period. The possibility of damage to the intervertebral disk as a result of careless spinal puncture for any purpose, or as a result of the use of a very large needle, is obviously an ever-present danger. In spite of this it seems probable that such injury, while it does occur, occurs very rarely. The following reasons might be cited to support this contention: 1. Diagnostic or anesthetic spinal puncture is rarely done at the fifth lumbar interval, the third and fourth intervals being in more common usage; yet, the incidence of ruptured disks is extremely rare at L-3 and is almost equally common at L-4 and L-5. 2. Being aware of this possibility, this consultant has made it a practice to question patients with proved disk rupture on this specific point. It has been impossible to establish any correlation whatever between the incidence of disk rupture and the incidence of previous spinal tap in these patients.

Dr. Cloward, of Honolulu, has written several articles recently which mention and specifically describe the use of deliberate intervertebral body needling for diagnostic purposes. Whether the problem suggested has been statistically studied and reported in the neurosurgical literature is not known. It has not been reported in the orthopedic literature, although the occasional occurrence of injury to the intervertebral disk as a result of spinal puncture has been reported.

## THYROID CANCER AND PREGNANCY

TO THE EDITOR:—*A young woman, 27 years old, who had a radical thyroidectomy five years ago, is anxious to become pregnant. The pathological diagnosis was carcinoma of the thyroid and carcinoma of the cervical lymph nodes. It was found that 10 of the 20 lymph nodes removed were involved with the metastatic tumor. Would pregnancy bring a return of the cancer?*

*J. James Cancelmo, M.D., Philadelphia.*

ANSWER.—It can be assumed that a malignant tumor of the thyroid, occurring in a woman 27 years of age and metastasizing to a number of cervical lymph nodes, is a papillary carcinoma, or a follicular variant of a papillary carcinoma, which will run the same general clinical course as a papillary cancer. Most of these tumors are sensitive, to greater or less degree, to stimulation by thyrotropic hormone of the pituitary. Anything which increases the output of this hormone tends to stimulate the growth of the tumor, and anything which inhibits the output of thyrotropic hormone tends to slow down or even arrest the growth of papillary carcinomas. There is little data on the effect of pregnancy on the output of thyrotropic hormone, but from the clinical standpoint it does seem that pregnancy causes increase

in the growth rate of both benign and malignant tumors of the thyroid. As a matter of policy, therefore, it is often well, as has been done in this case, to warn against pregnancy soon after removal of a papillary carcinoma. In this case, however, five years have passed without evidence of recurrence, and, although this does not guarantee a cure, it strongly suggests that the disease has been eradicated. Most recurrences of papillary carcinoma manifest themselves in the first three years after operation. It is not believed that the patient can be told that pregnancy is absolutely without risk of activating the carcinoma, but, on the other hand, if it were to activate the carcinoma, the carcinoma would probably be of the endocrine-sensitive variety which could be equally well inactivated again by suppressing the thyrotropic hormone of the pituitary after the pregnancy. This can be easily done by giving 3 grains (0.2 Gm.) of desiccated thyroid daily. During pregnancy the patient should certainly take 2 grains (0.12 Gm.) of desiccated thyroid daily in order to suppress pituitary activity. The possibility of recurrence of the carcinoma as a result of pregnancy will be slight if she will take thyroid.

## HANDLING METAL AND HYPERHIDROSIS

To the Editor:—*The owner of a small tool-and-die shop states that about 1 out of 10 of his employees is unable to handle steel or other rustable metals without causing them to corrode shortly after they have been handled. He adds that this also occurs when women handle these metals during their menstrual periods and after the employees have eaten tomatoes or other such foods. Is there any antidote or drug these people could take to counteract the condition, as it is a great handicap in the handling and shipping of highly polished machinery and tools?*

*Carl J. Elward, M.D., Wabash, Ind.*

Answer.—This problem may be approached from many aspects. The use of gloves or protective creams, such as silicones, might be given consideration. The use of anhidrotics, local or systemic, would not be indicated. If the precipitating factors suggested by the question were based on accurate observation, it would be a simple matter to interdict the ingestion of tomatoes and other such foods by the workers. Unfortunately, however, checking with other tool-and-die manufacturers disclosed a large number of other claimed etiological factors. For instance, one owner of such a plant was certain that this problem resulted from an upset stomach that could be cured by the prompt use of a laxative. Others incriminated nervousness, tensions, alcoholism, etc. It is fairly certain that increased perspiration enhances the tendency toward rusting, and hyperhidrosis results from many factors. This can be decreased by adequate air conditioning. The practical solution, however, rests in treatment of the metal rather than of the worker. One manufacturer stated that his workers keep an oily rag handy, and, when they touch any piece of metal, they quickly rub this rag over it, with resulting protection against rust. Others put a thin coat of oil, even thin mineral oil, on all ferrous metals. Since a set of dies costs from $1,000 to $1,500, this is a serious economic problem indeed.

## CONGENITAL HEARING IMPAIRMENT

To the Editor:—*A boy, aged 8 years, has always been deaf. At the age of 4 years a hearing aid was procured for him, and now, after attending a special school for the hard of hearing, he is able to have intelligent speech, with an excellent inflection to all his words and sentences. His otorhinolaryngologic examination does not reveal any disease or abnormal findings of the nose, throat, or ears. Audiometric studies show a hearing loss of 45 db. in the 125 and the 250 frequency, dropping suddenly to an 80-db. level in the 4,000 frequency, after which no sounds are heard. Tone testing by bone conduction (only in the right ear) shows a 60-db. loss in the 1,000 and the 2,000 frequency. The patient hears nothing in any of the other frequencies by bone conduction. Does this patient have any condition other than a degenerative process in the organ of Corti or a congenital type of deafness, in view of the fact that his speech is without the usual monotone of hard-of-hearing persons?* *M.D., Ohio.*

Answer.—One would be inclined to question the validity of the audiometric testing involved in this case. It is often difficult for an 8-year-old child with an advanced hearing loss to respond accurately to pure tone testing, both by air conduction and by bone conduction. It is not believed that one can accurately test bone conduction beyond a 45-or-50-db. area. In any event, it would seem that this boy has a congenital type of hearing impairment, or the impairment may have been due to some illness in infancy and will not progress in the future. The patient's ability to develop good speech, with excellent inflection, would indicate that his actual hearing may be better than the pure tone tests seem to indicate. A speech reception threshold test would certainly be indicated in this case.

## SOLAR RETINITIS

To the Editor:—*What treatment is recommended for a slowly progressive case of granular degeneration in the macular region of the eye, secondary to a solar retinitis, in a 40-year-old man whose health is otherwise unimpaired?*

*M.D., Ohio.*

Answer.—No specific treatment is known which will arrest progressiveness in all patients with solar or similar macular degenerations. The treatment of coexisting metabolic imbalances and infections,

which involve the retina and other similar bodily tissues, may retard retinal degenerative progressiveness sufficiently to be justified. Among the many forms which have been experimentally employed are (1) vitamins, especially carotenoids; (2) minerals, especially iodine and iron; (3) hormones, especially thyroid and adrenal cortical extracts; (4) lipotropic agents, especially methionine and the cholines; (5) anticoagulants; and (6) vasodilators. Only if a specific need exists, will this treatment be of value. Unless a metabolic imbalance or infection coexists, solar retinitis, as described, seldom extends into the peripheral fundus.

## ROUTINE USE OF OXYGEN FOR MYOCARDIAL INFARCTION

To the Editor:—*Is the routine use of oxygen (via an oxygen tent) in all cases of myocardial infarction and for periods as long as two weeks good medical practice? Please give some views on the use of oxygen therapy in such cases.*

*M.D., California.*

Answer.—Oxygen therapy is not to be used routinely in all patients with myocardial infarction and certainly not for periods as long as two weeks, unless there are specific indications. Major indications include impairment of the circulation, as evidenced by marked decline in blood pressure and circulatory collapse, impairment of respiration produced by congestive failure and pulmonary infarctions and infections, anginal pain, marked asthenia, and cyanosis. Oxygen may be used in the case of patients who have had large infarcts and in whom it is anticipated that the course may be difficult. An oxygen tent may be of some value during hot weather, when air conditioning is not available, to provide comfort for the patient and to reduce the load on the heart.

## FRACTURES OF TRANSVERSE LUMBAR PROCESSES

To the Editor:—*On looking at x-ray films, there sometimes appear to be fractures of the transverse processes of the lumbar spine, but there are no associated clinical symptoms. Could part of these processes occasionally fuse normally so as to look as if there were fractures present? Or could overlying shadows make such a condition look apparent, although not real?*

*G. L. Lester, M.D., Chautauqua, N. Y.*

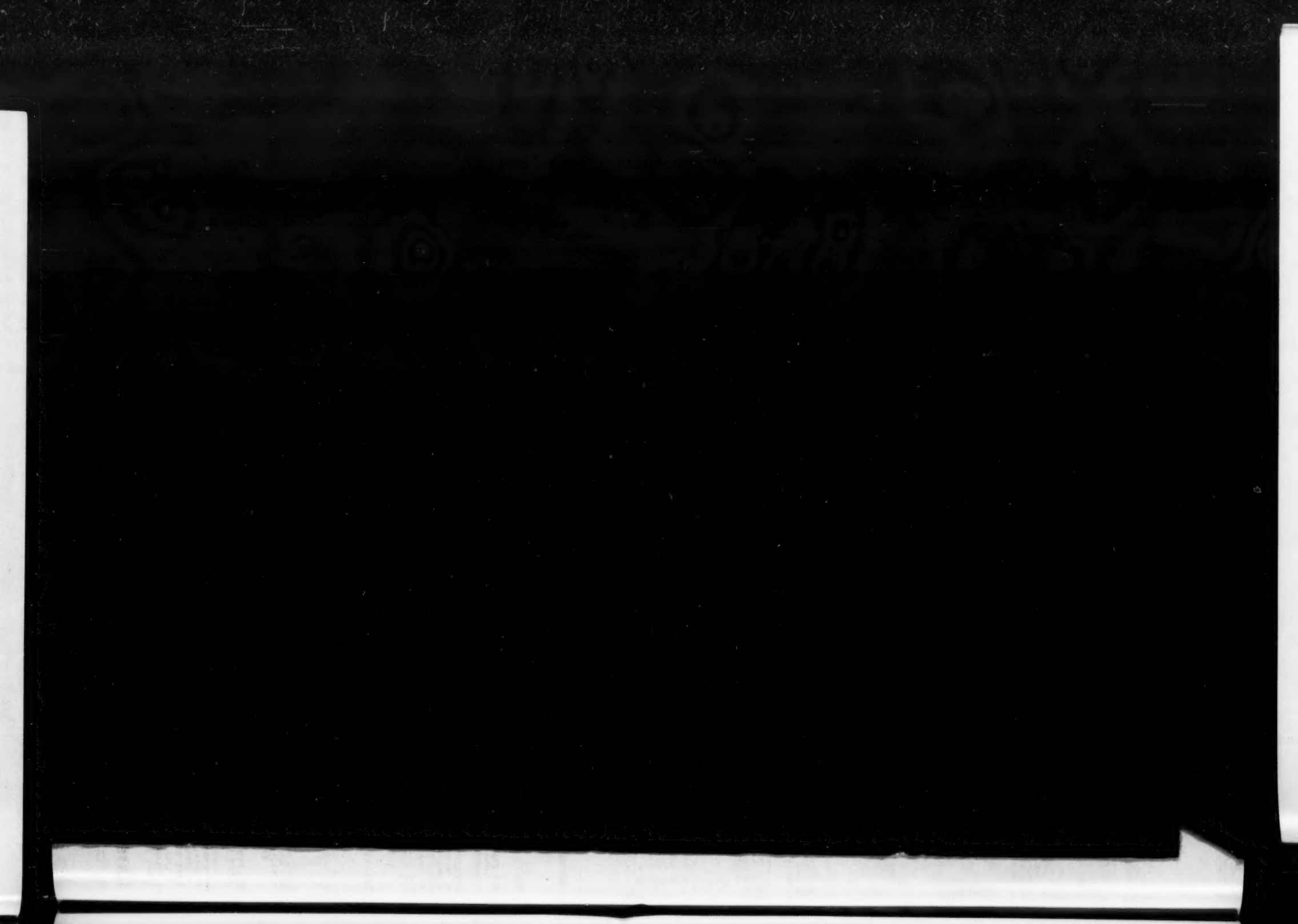
Answer.—Fractures of the transverse processes of the lumbar spine are relatively rare fractures due to the protected location of the processes. When fractures do occur, they usually are due to severe direct trauma, and they give extremely severe pain localized to the injured bone. The transverse processes of the first lumbar vertebra may arise from separate ossification centers and remain a separate ossicle. The 12th rib may be abortive and be represented by a small separate ossicle. The margin of the psoas muscle may cast a shadow of decreased density across a transverse process, simulating a fracture, but this line can usually be traced above or below the process.

## OCCUPATIONAL DISEASE IN THE TANNING INDUSTRY

To the Editor:—*In the reply to my query concerning occupational hazards in the tanning industry (J. A. M. A. 165:117 [Sept. 7] 1957), the consultant states that "the total number of diseases scarcely warrants group compilation or statistical analysis." I believe, however, that the incidence is not known because of the failure to study thoroughly and report cases and that this failure is for specific reasons.*

*I recently attempted to have a patient admitted to a university hospital for study and received this reply from the chief of staff: "It is the policy of this Medical School to have the staff avoid caring for industrial cases where there is a possibility of litigation, since it is desired that we merely act as referee for the Industrial Commission or as a friend of court. Therefore, I do not think that I should accept the patient to whom you so kindly referred in your recent letter." I understand the reluctance to accept such a patient, since it is difficult to prove anything. However, this does not aid in the thorough compilation of diseases and the drawing of technological conclusions that are necessary in this study.*

*The tannery in my community is engaged primarily in the manufacture of gloves, jackets, etc., from deerskin. The following list includes some of the chemicals with which employees are in contact: sodium sulfide, lime, sulfuric acid, ammonium sulfate, salt (NaCl), sodium bichromate, sodium hyposulfite, bicarbonate of soda, soda ash, aluminum sulfate, the commercial tanning agent Tanolin R or Lanstan KR, formic acid, ammonia, trisodium phosphate, sodium formate, sodium sulfate, and sodium acetate.*

*I believe a thorough statistical survey should be made of etiological factors relative to morbidity and mortality among tannery workers. This survey would especially involve the lungs (bronchitis and bronchogenic carcinoma), the kidneys (nephrotic syndrome), and the vascular system (myocardial fibrosis and degeneration), the dermatological aspects being of minor importance. I feel that there is enough suspicion, correlation, and coincidence in my small community to warrant a comprehensive study.*

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